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A PRACTICAL METHOD OF SELECTING DONORS FOR BLOOD TRANSFUSION

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When the loss of blood due to acute hemorrhage has been severe it is frequently necessary to replace the lost volume in order to sustain life. This operation is always an emergency, as a few hours delay may mean the death of the patient. Experimentally it has been found that when the loss of blood exceeds one half the total blood volume the animal dies. However, even with this great loss, life may be sustained by replacing the blood volume with some solution. Clinically we know that when the loss of blood from acute hemorrhage reaches about one-third of the total volume there is grave danger unless the lost volume is replaced at once. The blood volume may be replaced with:

1. Whole blood.
2. Blood plasma.
3. Normal salt solution.
4. Colloidal solutions as Gelatin, 2 to 6%.
5. Tragacanth or Acacia solution, 2 to 6%.

Normal salt solution alone, so commonly used, is of doubtful vaue. At best it is only temporary. Salt solution is rapidly diffused into the tissues, leaving the blood vessels empty, and bringing about an acute oedema of the lungs and other organs that may prove fatal.

Colloidal substances of certain osmotic tension, such as Gelatin and Acacia, are much better. Of these, a solution of Acacia is to be preferred. In severe hemorrhage a 6% solution of Acacia in normal (.85%) salt solution should be used intravenously. In less severe hemorrhage a 3% to 4% solution may suffice.

The advantages of Acacia over Gelatin may be mentioned. It is colloidal in nature but contains no proteid substance, thus avoiding anaphylactic reactions. It is neutral in reaction while Gelatin is acid. It is difficult to obtain pure Gelatin free from acids. Acacia may readily be sterilized by boiling or in the autoclave. We believe that when whole blood is not available for emergency transfusion, Acacia or Tragacanth solution should be the choice.

As whole blood has proven by far the most valuable substance to replace the loss of blood from the system it should be used in all cases when possible.

The modern indirect or citrated blood method of transfusion has made it possible for almost any one with moderate technical skill to do a blood transfusion. However, on reading the literature on methods of blood transfusion, selection of donors and the severe reactions and accidents that occur when using hit and miss methods, one cannot but hesitate to perform this necessary operation where laboratory facilities and trained technicians are not available or convenient.

The Moss method of blood grouping has become the standard. His original method, or some modification of this method, is now universally used in selecting suitable donors. According to Moss' studies, now generally accepted, every human being belongs in one of four groups, depending upon the relation of the agglutinating and hemolyzing activity of blood serum of one individual to red blood cells of another. For convenience we quote the Moss blood grouping:

Group 1. Serum agglutinates *no* corpuscles. Red blood corpuscles are agglutinated by serum of Groups II, III, and IV.

Group II. Serum agglutinates the corpuscles of Groups I and III. Corpuscles are agglutinated by the serums of Groups III and IV.

Group III. Serum agglutinates the corpuscles of Groups I and II. Corpuscles are agglutinated by the serums of Groups II and IV.

Group IV. Serum agglutinates the corpuscles of Groups I, II, and III.

Corpuscles are agglutinated by *no* sera.

The blood from the same group has no action on the other, except a possible serum or anaphylactic reaction due to foreign proteid. Approximately 10% of the population fall in Group 1, 40% in Group II, 7% in Group III and 43% in Group IV. Moss and others have

demonstrated that the isohemolysins and iso-agglutinins in the blood of either the donor or patient caused the severe reactions and accidents following transfusion of whole blood when the donor and recipient were not in the same group.

In an article by Moss in American Journal of Medical Sciences 1914, No. 147, page 698, the value of selecting a donor of the same blood group as the patient was ably demonstrated. Later it was found, especially during the war, that donors from Group IV could be used in an emergency without much danger of accidents, so this group is known as the universal donor.

In order to properly carry out the Moss-grouping it is almost necessary to have a well equipped laboratory, skilled technicians, besides having on hand, at all times, the blood serum or corpuscles of Groups II and III. Unless donors of the known groups are known it is sometimes difficult to find a suitable donor in an emergency.

Moss and later Ottenberg have pointed out that iso-hemolysis, the most dangerous reaction that occurs, is always accompanied or preceeded by iso-agglutination. Several attempts have been made in recent years to simplify the technique of selecting suitable donors, by simply testing the blood of the donor against the patient for agglutination.

Recently we have been making a study of the method reported by Drs. Payton Rous and J. R. Turner of the Rockafeller Institute in the Journal of American Medical Association, June 12th, 1915, Vol. LXIV, Page 1980. This method was used successfully in the hospitals during the war. Our studies have been confined mainly to comparing this method with the more elaborate blood grouping. These studies indicate that when this simple method found the blood of donor compatible with the blood of the recipient they were in the same group of the donor,sometimes in Group IV. As the technique is quite simple, and the apparatus required usually found in any moderately equipped physician's laboratory we feel that the method with a little practice can be used in almost any doctor's office.

No known group of serum is required. It is not a method of grouping but simply a method of finding a suitable donor. The apparatus and reagents required are:

1. A microscope.
2. A 1 to 10 white cell (leucocyte) diluting pipette.
3. Six or eight small test-tubes (Wassermann tubes).
4. A few (8 to 10) capillary pipettes (Wright's) which anyone can make from glass tubing. We use a 4 mm. soft glass tubing.
5. Microscope slides and cover glasses.
6. About an ounce of fresh 10% solution of Sodium citrate in water.
7. About an ounce of normal (.85%) salt solution.

Collecting the blood: Select two or more prospective donors. Blood is taken from the patient and each prospective donor. First collect the blood from the patient. A sufficient amount of blood may be obtained by making the usual puncture of the tip of finger or lobe of the ear. The 1 to 10 white cell pipette is first rinsed out with sodium citrate solution. Then sodium citrate solution is drawn up in the pipette to the mark 1. Rapidly fill the pipette with blood to the mark 11. It is necessary that the blood flow quite freely from the puncture so that air bubbles are not drawn into bulb and to prevent clotting. The blood is then expelled into a marked wassermann tube. We now have a 1% citrated blood which will not clot. If several donors are to be tested two pipettes full of blood should be taken from patient. The white cell pipette is simply rinsed out with sodium citrate solution or with distilled water and is ready for use to collect blood from each prospective donor. One pipetteful is taken from each donor and expelled into tubes properly labeled with the name of the prospective donors.

Mixing. The blood of the patient and the blood of each prospective donor is now mixed in the Wright's capillary pipettes. Three combinations are made of the patient's blood and that of each prospective donor.

1. Nine parts of patient's blood to one part of prospective donor's blood.
2. Equal parts of patient's blood with that of donor.
3. One part of patient's blood and nine parts of prospective donor's blood.

The simplest method of measuring the blood is to make a pencil mark on the capillary pipette. A column of blood is drawn to the mark, allowing an air bubble between each column makes it quite easy to measure and count out the amount required. Nine parts of patient's blood,—one of donor's blood. In another pipette five volumes of patient's and five of donor's. In a third pipette one part patient's blood and nine parts of donor's blood. To insure proper mixing, the blood should be expelled on a clean slide mixed and drawn back into the capillary pipette. The end of the pipette may be sealed if it is desirable to transport the blood. Each pipette should be labeled with donor's name or number. The pipettes are kept at room temperature and readings may begin in five minutes.

Often unsuitable donors can be eliminated at once but one should wait 15 to 20 minutes before final readings are made. Miscroscopic agglutination is looked for.

Method of Reading. Break off the end of the capillary pipette and expel a small drop of the nine to one mixture of blood on one end of a clean slide. Add a drop of normal salt solution and put on a clean cover slip. At the other end of the same slide place a drop of the one to one mixture. The slide should be labeled with donor's name. Examine under microscope the low power 1-3 objective. Prepare a slide for each prospective donor. Fresh slides may be made every few minutes up to 15 minutes and no donor should be selected until after this time, but individuals with unfit blood may be eliminated in from 3 to 10 minutes. When agglutination occurs the red blood cells are seen adhering together in irregular clumps and masses of varying size depending upon the degree of incompatibility. The most striking picture (largest clumps) may be seen when there is nine parts of agglutinating blood to one part of agglutinated blood.

Selecting the donor. If after fifteen minutes incubation there is no clumping in either the nine to one mixture or the one to one mixture the inference is that the blood of the prospective donor and the blood of the patient is compatible; that is, they do not agglutinate or hemolyze each other, and transfusion is safe. The patient and donor usually belong in the same blood group.

Patient's blood 9, Donor's blood 1, No agglutination. Patient's blood 1, Donor's blood 1, no agglutination. Transfusion safe.

If there is clumping present in the nine to one mixture and little or no clumping in the one to one mixture it is certain that the blood serum of the patient agglutinates the corpuscles of the prospective donor and transfusion would be dangerous. The patient and donor are in different blood groups.

Patient's blood 9, Donor's blood 1, agglutination. Patient's blood 1, Donor's blood 1, slight or no agglutination. Transfusion dangerous.

If there is no clumping in the nine to one mixture and clumping in the one to one mixture the blood serum of the prospective donor agglutinates the corpuscles of the patient, while the risk of transfusion is less it is doubtful if donor's blood would be of much benefit because it is soon shunted out of the blood vessels.

Patient's blood 9, Donor's blood 1, no agglutination. Patient's blood 1, Donor's blood 1, agglutination. Value of transfusion doubtful.

If the patient's blood happens to be in Groups I or III it may be difficult to find a suitable blood even after the examination of several prospective donors. In the emergency the blood of an incompatible donor may be used, provided the corpuscles of the donor are not injured by the serum of patient.

The combinations of nine parts of patient's blood and one part of prospective donor's blood in one capillary pipette, and in another pipette 1 to 9 mixture, one part patient's blood, nine parts of prospective donor's blood is made. If there is no agglutination in the nine to one mixture with agglutination in the one to nine mixture, it indicates the blood serum of the prospective donor agglutinates the corpuscles of the patient. This donor's blood can be used because when such blood serum is introduced into the patient it is diluted in the circulation and otherwise combatted. The donor's blood is usually in Group IV and can be used in an emergency.

Patient's blood 9, Donor's blood 1, no agglutination. Patient's blood 1, Donor's blood 9, agglutination. Transfusion safe.

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Discussion

Dr. Lea A. Riely: Oklahoma City. A paper like this is of such practical importance to both internists and surgeons that I am sorry it could not have been read before a general session. Transfusion is done alike by internists and surgeon and there is no method of therapy which ought to be studied more than this as it has so many angles. So simple and harmless when properly done—so disastrous when improperly done.

The great danger is in injecting a foreign proteid into a blood stream as anaphylaxis. A patient transfused by some donors ought to be tested for agglutination before each transfusion. They ought to be desensitized if transfused more than one time. We had an example of this in Oklahoma City brought out recently, when patient transfused by same donor six weeks after first transfusion, developed anaphylactic shock and died within a few hours.

There is no more brilliant therapeutic result

than in injecting blood of a mother into her baby with an acute hemorrhagic disease of the newborn. There, we do not necessarily have to test for agglutination. In acute exsanguination where life is in danger, you will be justified in transfusing without laboratory test resorted to.

BLOOD TRANSFUSION—CITRATED METHOD.

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In the early part of the present century the discovery was made that the condition of patients suffering from hemorrhage and various other pathologic conditions could be benefitted by what was termed "direct transfusion of blood" from some donor, usually some other member of the family or some imtimate friend.

Certain untoward results, however, to some extent cooled the ardor of those attempting this much heralded "Sine quo non" for all diseases and led to other and deeper investigation and revealed the fact that because of hemolysis the blood of one person could not be mixed with that of another. Severe reactions were more or less frequent, accidents due to clotting interfered and so it was natural that some modification of this method should be sought for, that would overcome these difficulties. The reporting of a fatal case caused by hemolysis by Pepper and Nesbit lead to further investigation.

Another caution, which should also be observed without fail, is to have a Wassermann on every prospective donor and use only those found to be negative.

Crile was perhaps the most enthusiastic advocate in this country of transfusion by the direct method and has explained his technic very thoroughly in his work on "Hemorrhage and Transfusion."

I regret I am unable to give the proper credit to the one who originally investigated the method now commonly known and spoken of as the Citrated Method of Indirect Transfusion but a careful search of such literature as I had available failed to give me that information. The recent great War, however, with its large number of severely wounded men to whom this treatment was administered, has done more to popularize this method than anything else since its use first began.

Indications for Blood Transfusion:

In a paper on "Sodium Citrate Transfusions" by A. L. Gaybat of New York, formerly Captain in the Medical Corps U. S. A. and Chief of Laboratory,General Hospital No. 12, published in the Journal A.M.A. Jan. 4, 1919, there appears a very extensive but comprehensive classification of those cases in which this procedure is to be suggested and advised, from which I quote:

1. To replace blood in hemorrhage.
2. To stimulate blood forming organisms.
3. To alleviate or cure hemorrhagic conditions.
4. To act as a stimulant or tonic.
5. To neutralize or overcome effects of poison.

The author quoted above at great length subdivides the above classifications, but for the purpose of this paper, which it is desired to be brief and it is hoped will be practical, we will omit the subdivisions and consider simply the five classes mentioned above.

As mentioned above the recent Great World's War has been the means of bringing out many new ideas,prominent among which is the subject of this paper. The writers of ten different papers, from which many quotations will appear time to time as the author proceeds, almost without exception speak of the use of transfusion on wounded soldiers and of the many brilliant results obtained. The War is over but the lessons taught there should remain with us for many years and until we are able to improve upon them.

1. Speaking of the needs for this treatment, who is there that has not at some time in his professional career faced impending disaster from hemorrhage from an ulcer of the stomach? The writer can recall two such instances in his own career when for days and weeks following the hemorrhage the patient with lowered resistance was slowly nursed back to health again. If I had possessed at that time the knowledge I now have as to the value of blood transfusion, the patient, I believe, might have been restored to a far greater degree of health and in a much shorter time.

What has been said of hemorrhage from ulcer of the stomach is equally true in cases of ruptured ectopic pregnancy:especial attention should be called to the necessity for determining whether we are dealing with a hemoglobinanemia or not. Patients suffering with a small percentage of hemaglobin will be slower to show results, though, of course, it is apparent they are in the greater need of treatment. Not all patients suffering from hemorrhage suffer from excessive lack of hemoglobin. This has been explained by one author in the following manner: as the hemorrhage progresses, the body puts forth a great effort to replace the lost blood with other fluids and in some unexplainable way the percentage of hemoglobin is maintained at an unexpectedly high figure.

2. To Stimulate The Blood forming Organs In Blood Disease:

Unfortunately not so much can be said of the success of transfusion of blood in this class of cases, which might be covered by simply naming Pernicious Anemia and Leukemia as in the classes we have just been considering. Of course, every one knows that these diseases in probably the greater majority by far are secondary and not primary in character. This method of treatment, therefore, is not recommended as a postitive cure but simply an assistant while the real cause of the condition is being sought. True sufficient improvement may be seen to warrant the repeating of the operation several times and not infrequently those who have been doing a considerable amount of this work report they feel sure they have prolonged the life of their patients and made them quite comfortable for several years.

Lindmann of New York (Journal A. M. A. June 7, 1919) reports a series of 108 cases of pernicious anemia treated by "Direct Blood Transfusion", but while he makes mention of the fact that larger amounts of blood were used in these than in other cases, he unfortunately does not give us the end results and so the information is of no special value except to show the extent to which it is being practiced. He, besides, is a "devotee at the Shrine" of direct method and speaks in rather slighting terms of the method advocated in this paper; but he practically stands alone in this opinion.

In the hands of the careful and painstaking operator I believe this method of treatment well worth the effort in every case of pernicious anemia.

3. The third general class of cases where transfusion is indicated is the hemorrhagic cases of newborn children. In these, the writer has had no personal experience, but Dr. Harry Lowenbury, Pedriatist to Mt. Sinia Hospital of Philadelphia, in Jour. A. M. A. May 3, 1919, reports blood transfusion performed on a babe two days old in a practically moribund condition. In this case the blood was injected directly into the lateral sinus; 80 CC. being used with ultimate and complete recovery.

One advantage not to be lost sight of here is the fact that no testing of the blood is necessary if the mother's blood is used.

4. The fourth general class of cases for which transfusion is recommended are those in which a stimulant or tonic is necessary, especially in patients where an operation is necessary but is especially contraindicated in patients suffering from infected wounds in which the blood conditions are such as to make operative procedure a very grave undertaking.

In this connection I desire to report one case coming under my observation.

The patient, an over-seas soldier, was severely wounded in the left knee in the battle of the Argonne in August. It was the following March when he came under my care; every effort possible had been made to save the leg, but the long continued drain caused by the sepsis had left him with about 2,000,000 R. C. and about 39% hemaglobin: a resection of the knee was very desirable but his condition was such that it was not considered safe. Transfusion was decided upon and a donor secured whose blood was compatible with that of the patient and 500 cc of Citrated Blood was given; there was considerable reaction but the second day his Red Blood had increased to 3,500,000 and his hemoglobin to about 60; a very few days after this he was subjected to operation and, though it was a somewhat tedious one, he stood it very well and began to improve. Later on it was necessary to amputate the leg and his condition had improved sufficiently by this time so he was not given a second transfusion.

Much has been written and said concerning the beneficial results to be obtained from the use of Citrate Blood transfusion in cases of shock but of this the writer has no personal experience and so will not discuss it. The treatment seems such a logical one, however, that it would be well worth trying, the only disadvantage might be in the opportunity to secure on such short notice a suitable donor.

5. The fifth and last class of cases to be mentioned in this paper are those in which it is desired to overcome or neutralize the effect of bacterial infection. While it is obvious that reporting a small number of cases does not by any means conclusively prove the efficacy of any plan of treatment, the comparison of a practically equal number of patients treated by the same men in the same hospital, with and without transfusion, the patients taken without special selection, is of value in determining certain fundamental facts upon which we may lay the foundation of a rational course to pursue. The epidemic of Influenza of the year 1918 and also 1919 called for more effort on the part of the physicians as a class than anything that has occurred in recent years.

Doctors C. W. Ross and E. J. Hund of the United Stated Navy and stationed at the Mare Island Navy Yard furnish (Jour. A. M.A. Mar. 1, 1919) a report which is well worth studying. While their series of cases only comprise 49 patients, this is sufficient to start our investigations. Twenty-eight of these cases were treated with transfusion of Citrated blood and twenty-one were treated sympto-

matically. Of the twenty-eight cases transfused, twenty-two recovered and six died or 21.4% fatalities; of the twenty-one cases treated symptomatically there were twelve recoveries and nine fatalities or a percentage of fatalities of 42.8%—exactly double the death rate of those who did not receive transfusion. The average number of days before temperature was normal in those transfused was five and in those not receiving this treatment fifteen. It will be seen at once that the number of days in hospital for those transfused would be correspondingly less

The writer desires to present a very brief report of one case of this character under his own observation. The case was seen while in service at Base Hospital Ft. Sill and was a soldier recuperating from an attack of pneumonia (as no case record or history of patient is in my hands I can only report the case from memory). At the same time the patient mentioned in a former class was in such a bad condition, this patient became alarmingly ill: transfusion was decided upon for the patient with the septic leg; the laboratory chief was consulted and readily entered into the plan to give the patient citrated blood. The four groups to be described by my co-laborer in this paper were prepared and a donor readily found in the person of a strong healthy and robust Sergeant of the Medical Department. Just when the blood had been prepared for administration the Chief of the Medical Service saw us and reported the pneumonia patient in a very grave condition and that it was probable he would not last through the night. The plan to give the citrated blood was changed and as it frequently happens both the patients came under group four the blood intended for the patient with the bad leg was given to the patient with pneumonia. In this case there was practically no untoward reaction and within twelve hours the patient was showing some improvement; in twenty-four hours he began to show a pyogenic infection in the form of an empyemia for which he was operated with a complete recovery.

As stated elsewhere,the reporting of such a small number of cases is not considered sufficient proof for any form of treatment but the results should lead us to weigh them carefully and give to them the proper amount of credit.

Technic: Believing the laboratory worker can give more valuable information than I could upon the technic of transfusion I have requested Dr. W. H. Bailey of Wesley Hospital Laboratory to take up this part of the subject after which I will speak very briefly of one other point.

Dangers: In the presence of such an assemblage as this I do not need to more than simply mention that strict attention must be paid to asepsis in every part of this operation.

2. The blood of no individual should be used that is not free from syphilis as evidenced by a negative Wassermann.

3. We shall occasionally probably meet with anaphylaxis, but if we may judge the statement aright of those who have met with this unpleasant result, it is one that may be overcome at least in the most of the patients without serious after results.

Conclusion.

1. Citrate blood transfusion has a definite place in the field of Medicine to-day and the results, therefore, obtained warrant its continued use in properly selected cases.

2. It probably promises less,so far as end results are concerned,in patients suffering with pernicious anemia than any other class of patients on which it has been used.

3. The assistance of the laboratory is necessary that the proper groupings of the blood may be made and in this way prevent as far as possible incompatibility between the donor and recipient.

4. Elaborate apparatus is wholly unnecsary.

5. Reactions often quite severe will be experienced in the use of citrated blood; but these soon pass away and leave no permanent results.

6. The results obtained warrant the use of this agent, especially in cases when severe hemorrhage has occurred, to prepare a patient for operation when blood conditions are below normal and to combat bacterial invasion.

Discussion.

Dr. J. W. Riley, Oklahoma City. I believe Dr. Clark is to be congratulated on bringing this before the medical society. I think this belongs to the medical men rather than the surgeons. It is, as he has shown us, a very useful and elastic protection. The sodium citrate method was first brought out by a surgeon from Buenos Ayres. To determine definitely the percentage of sodium citrate that prevents coagulation he found that 2-10 of 1% would prevent coagulation and that 3-10 of a grain per kill. was toxic. Large doses are unnecessary and sometimes harmful. We must not think that care must not be taken in this matter because if we do not take care there is certain reaction that comes from the salt solution, and it sometimes causes death. I want to report one case which was transfused successfully twice from his brother, the third time from his wife. It had a marked reaction.

The transfusion was well advanced before he showed any symptoms and it was continued. He was again grouped and his wife regrouped and found that they were in the same class. Next he was transfused with his brother and no reaction. The fifth time we used his wife's blood and he complained. The transfusion was stopped and the man became unconscious and died next morning. We must bear this in mind, that we must use every care in the matter. In regard to the transfusion for hemorrhage many things have been tried out.

Dr. J. E. Hughes, Shawnee: I will call your attention to the fact that the mother could be used universally as a donor for the child. I am speaking particularly in hemorrhages of the newborn child.

Dr. Clark, Closing: I wish to thank you gentlemen who have given this discussion.

SURGICAL MANAGEMENT OF TWO CONGENITAL MALFORMATIONS OF THE NEW BORN INFANT

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After I accepted an invitation by your Chairman to write a paper for this meeting, I was at a loss as to what my subject would be. I was well aware that you had read of all,and seen some of the new surgical procedures that have been developed in the past few years, and for this reason I believed that a review of one of the old, if not the oldest, pathological condition found in infants, namely congenital malformation which develops in early foetal life, and has to be taken care of soon after the child is born, would be of interest to this section. The two conditions I shall attempt to review are Spina Bifida and malformations about the rectum.

The etiology of these effects is very obscure at the present writing. All sorts of theories have been advanced, and I believe Church and Peterson sum up the causes in a brief way. They say the cause has been attributed to injury to the foetus or to the mother during the period of gestation. In a number of instances these defects have appeared in several children in the same family, and even in succeeding generations, showing an hereditary transmission. Other children in the same family being born with hairlip or club feet. The condition is more common in females than in males in a ratio of about 8 to 7.

A theory which has been advanced by a few men as to the causes of congenital defects is that there is a disturbance of the ductless glands either in the mother or, possibly, the foetus itself.

For some unknown cause in certain cases the epiplastic layers from either side fail to unite completely upon the dorsal aspect of the medullary groove. The spinal canal and its membranes thus remain open posterially. Due to this failure of perfect coaptation of the layers we find the Spina Bifida at different levels of the spinal canal.

Johnson in his text book gives a very brief and complete recapitulation of the differential diagnosis of the several forms of Spina Bifida. He says Spina Bifida in some of its varieties occurs about once in a thousand births. In the differential diagnosis the position of the tumor is of some consequence. Meningoceles occur almost always in the sacral region, the other forms, while they more commonly occur in the lower portion of the spine, may have their site in any region of the back. Meningocele is often a globular and more or less pedunculated tumor. The pedicle in myelocystocele is often narrow. If the two conditions are, however, combined the cleft in the vertebra is apt to be very much larger. In this latter composite group, the spinal cord is apt to be displaced backward. Its elements lie in the sack and are grouped on either side of the median line. In the meningocele and the myelocystocele, if the case is seen soon after birth, the skin overlying the tumor may have a normal appearance; later it is usually changed by pressure, more often by ulceration. This ulceration may be so extensive that it may not be easy to distinguish between these conditions and the cases of comcomplete want of union. That is rachischisis and myelomeningocele. The cases of Spina Bifida occulta in which no tumor is present may be hard to recognize with certainty, unless a good X-ray picture may be obtained. In the last group you will usually find a dimpling of the skin over the sacral region or a more or less extensive growth of hair over this region.

The symptoms of Spina Bifida occulta such as slight paralysis of the lower limbs, irritation of the bladder and rectum may not appear until later in life, or are not recognized until the child reaches puberty or at least when the most active growth of the child is taking place. These delayed symptoms are probably due to the fact that the cord which is usually scar tissue which extends from the skin or beneath the skin to the spinal canal does not grow; in fact it contracts and probably produces a pressure or tension on the nerve filament or cord.

The large variety of forms with which developmental defects of the rectum and anus are met with, are of considerable surgical importance. As you readily understand, the defect has to be recognized, an early diagnosis and prognosis has to be made very early after the birth of the child. In order to be able to

diagnose, and give a prognosis as to the result of any surgical procedure, we should have fair understanding of the embryology of the early foetal life and formation of the rectum.

The embryological facts which it is necessary to understand in order to appreciate the explanation of the various malformations of the rectum are: that the rectum proper is formed from the hind gut of the embryo. That for a time the hind gut communicates with the allantois. That for an extremely short period the hind gut communicates with the neural canal or groove. That a pouch forms from the hind gut, the post allantois gut, as a posterior extremity of the embryo develops. That as the tail develops the prolongation of the gut grows down with it, this rapidly disappears, forming the post anal or tail gut. This part of the anal canal is formed by depression of the outer layer of the embryo, anal depression or proctodeum which opens into the hind gut. That the permanent opening of the genito urinary tract is at its formation intimately associated with the proctodeum. That the bladder is formed from a portion of the allantois, with which the hind gut for a time freely communicates. That the uterus and the vagina are formed independent of the intestines.

There are important congenital defects seen in our every day practice, some of these defects are hopeless as far as surgical procedure is concerned. But a great many of the defects, as I will attempt to explain with charts, are more or less simple when we are familar with the early formation of the intestinal tract. First, absence of rectum and entire large intestine with fecal outlet at umbilicus. Second, imperforate rectum, with posterior urethral outlet opening into the bladder, opening into the uterus or vagina, opening into the neural canal. Third, is the proctodeum with imperforate anal canal, imperforate vulvar outlet, imperforate anterior urethral outlet. Anus well formed but ending in a culdesac. Irregular development as stricture, narrowing or tortuous condition of the lumen of the anal canal. Persistence of post anal gut, forming a diverticulum or congenital tumor.

Surgical procedures: In order to give the parent intelligent advice as to any surgical procedures, we should be able, first, to decide in our own mind, whether any surgical operation can relieve the child; secondly, if a surgical operation is advised, whether the surgical operation will be temporaty or permanent; thirdly, if the operation is to be a procedure which will be permanent, we should decide the time, and by this, I mean the number of days following the birth of the child, we should wait.

In the first variety, if the outlet of the umbilicus is patulent, no operation is indicated, but advice to the mother as to the care of the artificial anus, and the skin about the abdomen. This should be given in writing. and in detail. In the second variety with the outlets as I have mentioned an operation may be put off, possibly for several months with the expectation of having a better surgical risk, and I am convinced that in these cases, a temporary colostomy should be performed before any attempt of closure of outlets. In the third variety if we have a complete closure of the rectal pouch and no escape of gas or meconium, an operation as early as possible is indicated, and unless we can reach the culdesac very readily, here again I would advise a colostomy, and at some later date, an attempt to bring the rectum down to the proctodeum or sphinctre muscle. In the cases which I am glad to say we usually see, there is a small opening somewhere along the perineal raphae or into the vagina, allowing the meconium and gas to escape. These of course are the most favorable conditions that we have to deal with, and are usually able to go directly thru the proctodeum without injuring the sphinctre muscle which is usually present, and by drawing down the mucous membrane, and attaching it to the skin, we are able to close the fistulous tract and make a fairly good anus.

Surgical management of Spina Bifida cases will depend absolutely on the diagnosis of the individual case. The treatment may be and probably will be in the vast majority of cases advice to the mother as to the care of the child. We know that a large percentage of these children are classified as hopeless especially the Spina Bifidas which involve a portion of the cord and nerve filaments, or in other words upon examination we find a complete paralysis of the lower limbs and the sphincter of the bladder and rectum. These cases with such extensive involvement are classified as hopeless, as far as any surgical interference is concerned. A good many reports have appeared in the medical journals of operations done on these children, but the final results, I believe, have been bad. A child with a simple meningocele if not too wide a cleft, and the anterior wall of the vertebrae being intact give the best prognosis. I have closed three of these with fair results. Of course any operation, you will readily understand, must be done under the most perfect asepsis if you expect to get results, as this portion of the anatomy seems to bear infection very poorly. In the Spina Bifida acculta the methods of treatment suggested, are first, the injection of some aseptic or antiseptic fluid, such as sterile water or pure alcohol, injecting it as near to the fistulous tract or cord as possible. Second,

if no results are obtained from this procedure, then a clean dissection of the bands or tract may be attempted.

In this review I have quoted freely from Ball's text book on Rectal Surgery, Johnson's surgical diagnosis and Church and Peterson's text on nervous diseases.

211 First National Bldg.

Discussion

Dr. J. H. Laws, Broken Arrow: I would like to make some notations on this as a general practitioner. It has been suggested that an imperforate rectum occurred about once in 2,000 cases, so that even a general practitioner may pass through practically a lifetime of practice and never see one of those cases. I have seen about three cases. None of them were the extreme cases the Doctor speaks of; just slight membrane there, due to the enfolding of the epiblast with the endoblast where they meet, and just only a small membrane left. That was perforated. Two of the children I have been able to follow to the present time. If there had been any stricture of the rectum in the one, it has not been reported.

Now, as to Spina Bifida I don't know whether I understood the essayist right, or whether they very commonly, or most of the cases, give rise to symptoms, but one of the large clinics of the country, I noticed in reading their X-ray plates of Spina Bifida occulta, it seemed to me a common trouble without any symptoms; and as to the dimple, while that is true in many cases, I don't believe that we can entirely be guided by that.

Now, as to the parent, another thing I might mention is this, and it may be of some interest to the general practitioner, the meningocele that occurs, as Dr. Reed spoke of, at the medulla, I believe from the number of cases that occur in practice that is not nearly so common as the lumbar or sacral form of it. I will say the mortality of the cases that I have seen has been 100 per cent. But of the occipital region, all that I can call to mind now distinctly are two cases; one I don't know what came of it, as the family left soon after delivery of the child. The matter drifted along; I just merely spoke to the family about an operation, that the mortality was extremely high. A few months later I was very much surprised to see that the meningocele had all gone, and at present while there is an evidence of what happened there, while there is a fibrous union, at least enough to be seen there. When it comes to the lumbar or sacral regions, there is where the practitioner loses most of his cases. I might say that the mortality as reported by Rheimboid is very heavy, 75 per cent. of the cases. Of course, in the country we have difficulty in the matter of getting patients to seek surgical relief early.

But about the essayist's one point we could take very well, that here we have to get an anatomical reason for the formation of diverticulum, on the right side which gives symptoms of course, very much like appendicitis. All together, we have to have, in other words, an actual anatomical reason or cause for it.

Dr. W. M. Taylor, Oklahoma City: In so far as the embryology is concerned and clinically I have just about a dozen words. I have been confused in the classification of Spina Bifida clinically. This is Dr. Holt's classification; if we have fluid within the membrane to produce a forward protrusion of the membrane posterially we have one form, if it is in the cord we have another form, if it is in front of the cord the whole of that cord is pushed back and the nerve elements protrude, and we get other symptoms with this condition; we find our Spina Bifida occulta. I believe the majority of us have a conception of that as being that of a post-natal difficulty, or perhaps in time more like acidosal difficulty, while according to Hollis, it is absense of the interior portion of the vertebra, and we get a protrusion into the ..... or into the abdomen with resulting symptoms, and that is spina bifida occulta. That is not the definition as quoted by Dr. Will.He doesn't give that definition, but that is all right.

Dr. Will, Closing: Dr. Reed didn't say just exactly what formed when these arches were formed. Of course the nural and dural tract or canals are formed at the same time, and a great many authors claim that you have this condition; you have a case of hydrosepsis, or if you do away with your tumor forms in your spina bifida, you are bound to have hydrosepsis. I don't know much about that. In fact, I don't know that I have ever seen it. I have seen where we have spina bifida with those conditions, or in operations we have a hydrosepsis following it.

The treatment which the Doctor has discussed of these cases, I think he brought it out very thoroughly, the cases of spina bifida. As Dr. Reed emphasised, there are very few cases of it but what the problems are very very bad. There is no question about it. The cases I report, or saw and operated, were simple clinically, and purely a meningocele sticking out of the hernial sack of membrane, cord intact. There are very few of these cases you see, and I hope you never see any of them in practice, because there is so very little you can do, and the only thing I tried to tell you was the care of it while the child lived. Strange to say, some of these children do live, especially if they don't die of infection.

I remember several years ago I saw a boy who had grown to be fifteen years of age, had this immense tumor, and he was paralyzed,

but he was still living, and as luck would have it, luck for him, he developed infection and developed influenza, on his back quite a while, and the infection, I think, induced meningitis and he died.

The spina bifida occulta; Dr. Taylor mentioned this once before, but I have been unable to find it anywhere outside of Holt. Spina bifida occulta, as we understand it, is simply a lack of union or defect low down in the canal, and not, as I understood you to say, Dr. Taylor, a lack of union, or loss of the anterior portion of the canal.

Dr. Taylor: Protrusion of the membrane within the abdominal cavity, as the case might be.

Dr. Will: I mentioned the fact if we have a lack of union or rather loss of the anterior portion of that canal, we have what they call rachischisis, which means a lack of union in the canal. Those are the cases where there is an entire lack of bony structure. I imagine we could have spina bifida with that. The spina occulta as we see them, and as the books mention them, all of us know that very few know enough about them. As Dr. Reed says, a great many of the cases, or he says a great majority, but I hope that is not so, there is a protrusion in all children and so on. It is the ones that we see that are the ones usually with or some trouble with the bladder, not of the rectum.

CONGENITAL DEFORMITIES OF THE MOUTH AND FACE*

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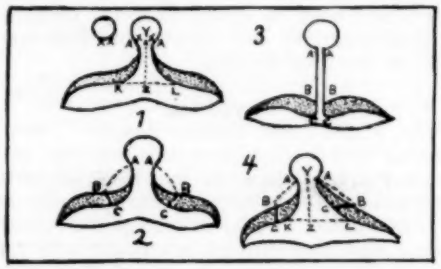
The subject of congenital facial deformities is time old, but it has only been within the era of modern surgery that anything like definite operative procedures for its correction have been advanced. For over thirty years the literature has been full of new methods, new procedures, and new ideas, but it has only been within the last decade or so that definite methods which should supersede all others have evolved themselves. Were these methods made standard, it would do much to erase the difficulty which has always been uppermost in the minds of the average surgeon, making this branch of surgery almost a terror to him.

A word as to the etiology. We almost might say there is no etiology, although it has been definitely shown, through the researches of Brophy and others, that heredity, coupled with malnutrition, are the only outstanding factors of note. We all know of many instances where two or more members of the same family have been afflicted with defective lips, palates, or both. Brophy traces many interesting genealogies, and shows that the fundamental principle of Mendal's law holds true in these cases. That malnutrition is an



unquestioned factor is evident, as we find the majority of these cases in the poor and undernourished. Of the many other theories, such as the question of supernumerary teeth and the question of the interposition of parts, I will merely mention but to state that they have no basis of fact.

In my own practice, I have two distinctive hereditary instances—one a mother with a hare lip whose only baby had a complete single cleft of the lip and palate. The second was that of a father with a deep fissure in the upper lip, and whose first child had a very great defect and died early in life with pneumonia. His second child, which I operated at the recent meeting of the College of Surgeons, had both a double lip and palate.

The time when to operate is one of the great factors of contention in these cases. In general there are two great schools. One follows the footsteps of Brophy and Blair, who advocate the earliest possible moment to operate, even going so far as to say it is best to operate within the first forty-eight hours of life if possible. The second, of which Berry of England and most of the Continental surgeons

are advocates, is to delay the palate operation until the 18th month to the third year.

I believe it is necessary to take up the consideration of the lip and palate as two entirely separate entities. The correction of the lip, I believe, should be undertaken as early as possible, even within the first forty-eight hours of life, provided, of course, that the child is a reasonable risk, as surely the slight trauma of the repair of the lip with a light anesthesia, which is unusually well

tolerated in infants, is nothing like as strenuous or shocking as birth. The lip at that time is easier corrected, the parts more readily grow back to their normal, the skin scar will be less, and the baby will have the power of suction which is so necessary to maintain its nourishment. It can be put to the breast almost immediately. Outside of these considerations, a most important aid to the surgeon is accomplished at this time, especially in alveolar clefts, as lip pressure is the most outstanding single factor in bringing together the alveolar ridge and palate. The three follow-

ing illustrations taken from an article by Berry of London show this most conclusively.

As to the method of lip correction, there have been many intricate mathematical procedures evolved for the making of a perfect, scar-free, smooth, thick, pliable lip, but I believe that the one outstanding operation is the Rose-Thompson operation. In order to have a perfect lip, the nasal opening should have the same round contour as the normal nasal opening, the ala should be free and on a line with its fellow on the opposite side, the lip should be of full thickness and not adherent to the mucus membrane on the inside of the mouth, the vermilion border should meet accurately, and the lip should have its normal bowlike curve. Thompson makes use of a compass with sharp points, so as to accurately measure distances. This, I believe to be a very necessary adjunct to lip surgery.

I use the Thompson operation, and operate as early in infancy as possible. As is shown in the following illustrations taken from the Thompson article, the lip is first entirely freed, undercutting well up underneath the ala of the nose. The normal lip length is measured as in AB. One end of the compass is then placed at the margin of the nostril and the distance measured to the edge of the vermilion border, and a small nick is made at this place. The same procedure is performed on the other side. The depth of the red lip is then measured on both sides. This depth should be a little greater than normal, allowing for shrinkage. With the point of a

thin cataract knife the proposed incisions are then outlined. Small spring clamps are then placed on the lip margins on either side to catch the labial artery. With a clean stroke of the thin blade, the lip is then denuded. A deep silkworm gut stitch is taken from within outward, including all the thickness of the lip except the very skin. This stitch should be placed as high posteriorly as possible. The knot is tied on the inside, and care should then be taken to see that the nostrils are in absolute alignment and that the opening is not

too small. A second stitch is taken in the same manner, 1-4 inch below the first, and tied, the ends being left long. With fine interrupted dermal suture, the skin of the lip is then accurately approximated—being very careful that no tension is put on these sutures. Great care should be exercised that the margins of the nasal opening be on a line, that the nasal opening be not made too small, and that the vermilion border should meet accurately.

The repair of the palate presents itself in an entirely different aspect. In the main, palate operations are divided into three great classes —1, the time honored flap splitting operation of von Laghenbeck; 2, the Brophy-Blair methods; and 3, the flap reversing methods of Lane. The method of choice depends much upon the time we operate. Provided we deem it advisable not to operate early, then I believe the operation should be deferred until just before the child commences to speak—approximately the second year of life. At that time, the flap-splitting operation of von

Laghenbeck, or a modification of the same, is unquestionably the operation of choice. We select this time, first because the longer we delay, the narrower becomes the cleft; second, because the tissues are firmer and the blood supply better, leaving less danger of sloughing and infection; third, because it is still before the voice of the child has become impaired. I believe that all cases of single clefts, without too wide an opening, should be operated at this time, and that the early operation should be limited to those cases of wide double clefts with complete separation of the pre-maxilla, and to those cases which have a tendency to too much food regurgitation. It has been my custom to select for early treatment only those cases with very wide separation, and then to do the Blair operation. I believe that even though we can not force the hard palate into absolute approximation, we can narrow it so that the flap-splitting operation later becomes very easy. The time for this procedure is as early as possible, but always before the first three months. I do not believe that the Blair-Brophy operation is ever indicated after the third month.

The objections to the Blair operation, alleging shock, destruction of teeth, and perforation of the floor of the orbit, I do not believe to be justifiable. The shock is not great, the floor of the orbit is only perforated by carelessness and a slight perforation does no harm, and Blair and Brophy both show that with care, there is no great destruction of the permanent teeth buds. When we consider the terrific mortality from pneumonia during the first year of life of these cases with large clefts, I can see no argument to its disadvantage.

It has been my custom to use a Hagadorn needle, number 20 silver wire, and very small plates, and to use just sufficient tension to bring together the hard palate. If this be impossible, I do not force things, so as to be certain to avoid sloughing. When the lip is repaired and the pre-maxilla in place, even though the hard palate is not in absolute contact, we have made a very wide cleft into a very narrow one. The tendency of this cleft, with the restored lip pressure, is to become ever narrower, making the flap-splitting operation at two years, a relatively simple matter.

Many modifications of the original flap-splitting operation of von Laghenbeck have been made, but I believe the simpler the procedure in these cases, the better. With the child in the exaggerated Rose position, the marginal edges of the mucus membrane are split with a very sharp thin knife. With a Brophy or Bartlett elevator, the flap is freely elevated, taking care not to tear into the palatine artery. The soft palate is split well to the tip of the uvula. It is usually not neces-

sary to make lateral incisions, as with care, we are able to mobilize the flap sufficiently so as to avoid any question of tension. The greatest care should be taken to mobilize the flap well at the junction of the hard and soft palate, because muscle tration at this point is greatest. With the split uvula pulled well backwards, we then insert a stitch of fine chromic, which includes a good sized bite of the muscle, but includes only the mucus membrane on the nasal side, and is tied on the nasal side. A row of interrupted fine chromic sutures are placed in like manner, knots being tied on the nasal side until the tip of the uvula is reached. This last suture is left long. I then commence from behind forward, using fine interrupted dermal sutures until the hard palate is reached. Then a continuous row of mattress sutures are placed so as to evert the mucus edges and give as great a contact as possible. I try to close the hard palate at one operation. If this be impossible, one of the flap reversing types may later be done, as I believe that the Lane operation is only applicable in closing small openings of the hard palate which we have been unable to close in any other manner. The mouth and nose should be kept thoroughly clean, and the sutures removed on the tenth or twelvth day.

Discussion.

Dr. I. B. Oldham, Muskogee: Dr. von Wedel has so thoroughly covered all the phases of this subject that I feel hardly able to add anything in regard to the discussion. However there are a few points. One is that of etiology. In olden times it was believed that monstrosities were caused by some sins of the father, etc.

The next question comes, why do we do these operations? What are they for? The first thing is to aid the child's speech and to masticate the child's food. As to the time of operation I think the closer to foetal life the more help we have in carrying out our work. The danger is slight. If the sutures are properly applied it very seldom results in the death of a child. We have less resistance in closing the cleft, and right at this time I wish to emphasize the point of using tension on the sutures. That should be avoided by thoroughly relieving that tension before the sutures are applied. As to the late operation where we have cleft and deformity of the septum it is always best to straighten the septum up. I disagree with the doctor in regard to the lip operation. I believe early is all right but I think the cleft should be operated before the lip. If we should not get a perfect union we would still have a better opening for a second operation. None of us intend doing a second operation but lots of times we have to do so. I think the lip should not be repaired at the same time the cleft.

Dr. von Wedel: I believe I have nothing further to say. I thank you.

ADVENTURES IN DIAGNOSIS*

BENJAMIN H. BROWN
Muskogee, Okla.

I. On July 2, 1919, a young man of 19, after feeling physically below par for a week or more, developed a severe headache and nausea. He vomited repeatedly during the night, and the next morning complained of stiffness of the muscles. Examination on the evening of July 2, showed a well developed and well nourished man moaning with headache. The head was retracted, knee jerks lively, and Kernig's positive. The pulse was 60; temperature 99.5°, white blood count, 14,700. The urine was negative. By lumbar puncture 30 cc. of bloody fluid was obtained under high pressure and 30 cc. of antimeningitis serum injected. The cerebro-spinal fluid showed no organism and no cells not accounted for by the presence of blood. Lumbar punctures were also done on July 4, and 7, fluid obtained grossly and microscopically identical with that of the first puncture, and antimeningitis serum introduced through the needle.

A tentative diagnosis was made of tubercular meningitis. Notwithstanding this the patient's condition steadily improved. His temperature reached 101.5° (the maximum) on the 7th, 8th, and 9th, although his other symptoms were alleviated, fell to a hundred on the three following days and then became normal. On July 12 he was considered able to undertake the journey to his home in the state of Wyoming. Under date of July 22, 1919, his father wrote me that his son was about well, and that he was driving all around the country in his car. Nothing further has been heard from him.

II. In February, 1920, Dr. H. A. Scott of Muskogee presented a boy of seven before the Muskogee County Medical Society. The patient gave a history of influenza about 6 weeks previously, since which time he had suffered from nocturnal insomnia. He habitually laid awake until the early hours of the morning, finally falling into a sound sleep lasting for several hours. The child was well nourished and strong, showing no abnormality on physical examination. A year after the presentation of this patient Dr. Scott reported that the perversion of the sleeping habits still persisted and that the child showed changes in mentality and disposition.

III. For a few days preceding Feb. 21, 1920, a boy of 10 had a degree or two of fever without any specific complaint of pain or discomfort. On the date above mentioned a general

physical examination was negative. The pulse was 80, temperature 100.5°, and the urine normal. The white blood count was 8,000 and the smear negative for malaria. On Feb. 27 the condition was about the same as at the first. The patient was then lost sight of until May 6, 1920. One or more weeks after my last preceding visit he had developed nocturnal insomnia with much active movement, tossing about in bed, and intense mental activity, lasting most of or all of the night. In the early morning the patient would fall asleep and sleep soundly for from 6 to 10 hours. The insomnia had been variable and was to a large extent uninfluenced by drugs or treatment. Two physicians had made a diagnosis of chorea, the tonsils being considered the source of infection. They were removed on May 10.

This patient remained under my observation from May 6 to July 12, 1920. At no time were any choreiform movements observed. During the day when awake his actions were normal; at night he showed an intense restlessness, kicking and threshing about, but his movements seemed always purposeful. The physical and laboratory findings were negative. The symptoms remained unchanged in degree and quality. Late information is to the effect that there is still no improvement in his condition.

IV. Beginning Dec. 18, 1919, a boy of six years was ill for a few days with what appeared to be a typical attack of influenza. Feb. 20, 1920, he had a recurrence also lasting a few days. Two weeks after an apparently complete recovery from the last attack he remained awake all night. From then until seen by the writer on July 21, 1920, he lay awake until from 3 to 6 A. M., talking and whistling, flouncing, twisting, getting up and walking about and screaming out. When finally he fell asleep he would sleep soundly for 8 to 10 hours. For a time he developed phobias. He was afraid of a car or anything that made a noise. He had developed a habit of puffing or blowing which continued.

The boy was well nourished and normal in appearance and a general examination was negative. The condition described above still prevailed when he was last seen by me Oct. 20, 1920, no plan of treatment seeming to have effected any change. Shortly thereafter he was taken to a sanatorium where he was treated by the strong arm method, spanked if he refused to lie quietly in bed and otherwise subjected to strict discipline. His mother reports the effect of this treatment very happy. He sleeps of nights, has lost his habit tics, and is in school and making good progress in his studies. Whether this improvement is a result of the treatment or a co-incidence is a matter for doubt.

Early in 1920 in two excellent articles Barker, Cross and Irwin reported 8 cases of epidemic encephalitis, all non-fatal, which had been subjected to a thorough study and analysis.[1] In their conclusions they stress the fact that the disease is essentially irregular andatypical in its course, and often wrongly diagnosed. This must of necessity be from the character of the pathology, any part of the nervous system, central or peripheral, being subject to attack. Dunn and Heagy[2] more recently in reporting 15 personal cases and 100 gleaned from the literature further emphazise this point and affirm that epidemic encephalitis is being repeatedly diagnosed as poliomyelitis, botulism, brain abscess, cerebral hemorrhage, thrombosis, embolism, meningitis, acute paralysis agitans, etc. Shall we add to this list hysteria, neurasthenia, and other ,functional nervous diseases? Strecker and Marsh[3] state that clinicians recognize at least 10 varieties of epidemic encephalitis: (1) polioencephalitic; (2) lethargic; (3) Parkinsonian; (4) cataleptic or catatonic; (5) meningitic; (6) cerebral; (7) polyneuritic; (8) myelitic; (9) myoclonic; and (10) psychotic.

1. On the Epidemic Acute and Subacute Non-suppurative Inflammations of the Nervous System Prevalent in the United States in 1918-1919. Encephalitis; Encephalomyelitis; Polyneuritis; and Meningo-encephalo-myeloneuritis, American Journal of the Med. Sciences, Feb. & Mch., 1920.

In summarizing the most important phenomena Barker et al state that the *onset* may be sudden or gradual, and with or without such prodromata as asthenia, lassitude, headache and vomiting.

2. Epidemic Encephalitis: Including a Review of 115 American Cases, Am. Jour. of Med. Sciences, Oct. 1920.
3. A Case of Epidemic Encephalitis with Unusual Features, Jour. Am. Med. Assn., March 19, 1921.

Among *general symptoms* drowsiness may be present in any degree or altogether absent, or the patient may be drowsy by day and complain of insomnia and restlessness at night. Mental depression, delirium, headache and vomiting are common. Fever is usually present in a moderate degree at some time during the disease.

The most constant and characteristic *focal symptoms* are due to eye palsies such as ptosis and strabismus. But almost any type of paralysis, flaccid or spastic, may be met with, as well as spasms due to irritation. The disease may closely simulate meningitis, with retraction, muscular spasticity and a positive Kernig's. In the latter type our only means of early differentiation is by examination of the cerebrospinal fluid. This in epidemic encephalitis is clear and free from microorganisms. It may or may not be under increased pressure. In the majority of instances there is a positive globulin reaction and an in-

crease in the cell count. Among the cases of Barker and his colleagues was one with a hemorrhagic spinal fluid, and they remark in passing, "In more instances than accidental injury to a small vessel will apparently account for, a bloody fluid is obtained on lumbar puncture in patients suspected to be suffering with the disease."

There is usually a slight to moderate leucocytosis.

In the opinion of the authors last quoted a positive globulin reaction and a small mononuclear count of from 10 to 100 in a cerebrospinal fluid which shows a negative Wassermann and bacteriological examination is strongly corroborative where there is reason to suspect epidemic encephalitis.

(It will be noted that in my first case reported above the cerebrospinal fluid was repeatedly hemorrhagic.)

November last Happ and Blackfan[4] reported 6 cases of insomnia following acute epidemic encephalitis in children. The first patient of this series, a boy of 4, was seen April 23, 1920. Apparently he was perfectly normal up to the night of the previous January 16, when he was unable to sleep, the nocturnal wakefulness continuing up to the date he was first seen by the authors. "The child would stay awake all night, spending the time in constant activity, talking, playing, singing, whistling, etc. Towards morning he would go to sleep and sleep a variable length of time, sometimes all day, sometimes only an hour or so during the entire 24 hours. The usual means to combat insomnia ..... had no effect whatever." The cerebro-spinal fluid was normal. The authors were puzzled as to the diagnosis, although the abnormality of the sleeping habits aroused their suspicions as to epidemic encephalitis. Later a study of 5 other children with nocturnal insomnia in which the diagnosis of encephalitis was confirmed by general and focal symptoms (fever, delirium, crossed eyes, etc.) and laboratory findings reassured them as to their opinion in the first case.

4. Insomnia Following Acute Epidemic (Lethargic) Encephalitis in Children, Jour. Am. Med. Assn. Nov. 13, 1920.

The children whose histories I have abstracted above were considered to be suffering from psychaesthenia. This paper of Happ and Blackfan was the first in the literature coming under my observation that suggested that a reconsideration of my diagnosis might be advisable. Since then, however, and since deciding on the theme for my present paper there has been an eruption of reports and discussions of similar manifestations.

Thus Leahy and Sands[5] report from the clinic of Bellevue Hospital six cases which had been referred to them for the relief of sequelae of epidemic encephalitis. They concluded from their study of these and other cases that instead of the complete recovery that was formerly expected many of these patients are left with one or more complications resembling practically every neurological disorder. What is of especial interest to us is that five of these six children, in addition to other post-encephalitic symptoms, showed varying degrees of nocturnal insomnia.

Ruetinmeyer[6] reports 8 cases in which children, following an acute fever (influenza or epidemic encephalitis?), were unable to sleep of nights until 4 or 5 A. M. and two other cases in which this type of insomnia was a feature of epidemic encephalitis. He states that Pfaundler has reported a similar series.

5. Mental Disorders in Children Following Epidemic Encephalitis, Jour. Am. Med. Assn., Feb. 5, 1921.
6. Postencephalitic Insomnia; Sweizerische Med. Wochenschr., Jan. 6, 1921. Abstract J. A. M. A. Feb. 26, 1921.

In a brief article in the Journal of the American Medical Association[7] other similar reports are mentioned, among them that of Hufstadt,[8] whose series is said to embrace 21 cases in children from 2 to 13 years of age.

Up to the time of reading the paper by Happ and Blackfan I had no reason to doubt that the three children coming under my observation were suffering from functional nervous disorders. I had not thought of spinal puncture as being advisable, and such was evidently the opinion of other consultants. Even now I prefer to let others draw the conclusions and announce the moral (if any) of this paper.

However, it may be well to remark that nowhere is history more prone to repeat itself than in epidemiology. Encephalitis is by no means a recent or hitherto unknown disease, epidemics having been repeatedly reported, even as far back as 1718. But we still know all too little about it. As one writer sagely remarks, "The subject merits special investigation."

7. Current Comment, April 2, 1921.
8. Muenchener Med. Wochenschr. 67, 1400, 1921.

Discussion

Dr. Horace Reed, Oklahoma City: Mr. Chairman, ladies and gentlemen. Dr. Will has very ably gone into the discussion of the embryological development of the child in certain stages with particular reference to the rectum. He has also touched upon the central nervous system and the defects which may take place in the cou se of its development. I shall limit my remarks to the defects that take place in the nervous system.

We must remember that the human embryo in developing goes through all the stages from the simplest form of life to the most complex.

At the same time all the various structures go through the various forms from the most simple to the most complex. There are epochs, chronologically speaking, in this development.

Now, the nervous system, corresponding to the simplest forms of life in the very beginning when it is first recognized, forms a groove, or thickening, which later becomes a groove on the dorsal aspect of the fetus. This groove develops finally into a canal, but this canal is formed by the coalescing of the arches, the arches, bringing up from either side of this groove coalesce and thus form the neural canal.

Now, the arches do not coalesce at the same time all along, but they begin at certain points to coalesce very much earlier than at other points; rather they begin at two points and progress from those points forward and backward until coalescence becomes complete all along. These points are in the mid dorsal region, posteriorily and somewhere midway between the frontal and occipital region in the anterior portion. So, we have three points then where the coalescence take place latest. These three points are in the extreme front, in the middle portion between the dorsal and the occipital, and in the sacro-coccygeal region.

Whenever a person is engaged in a hazardous occupation along with other persons in the same occupation, he who remains in that occupation the longest is more apt to happen to some accident, is he not, everything else being equal? If a person works two years in that occupation, and another person works one year in that same occupation, both being constituted equally and having equal chances of accidents, the one is twice as apt to have an accident as the other. That is accepted, isn't it?

Now then, whenever a coalescence, or a fusion in the structure, embryologically speaking, is late in taking place, accidents may happen which prevent it. And so we find it in the nervous system. In those points where the coalescence take place latest, we find these defects most often. True we can find them anywhere. We find them anywhere along the mid line from the glabella to the coccyx or to the sacrum. We find them most frequently in the sacral and coccygeal regions, and I will explain why we don't find any in the coccygeal region in advanced form a little later. The reason is obvious. When we find them in the frontal region, what do we have? We have these conditions, some of them may be in the form of a tumor, as the Doctor has shown, and some may be very trivial defects. We speak of meningocele. As a matter of fact what is more common is a thin sack with transparent fluid in it, covered by a very thin skin. When we come to the final analysis of that sack, we will find that it contains neurological elements in the membrane. This applies more parcicularly to the occipital region.

As regards operation, you may succeed in removing the tumor, but you will not succeed in curing your patient of the paralysis which it had when it was born. You may even make it worse, because you will most likely remove certain of those neurological elements which are essential.

He also mentioned the tumor which occurs in the sacral region. Now, let us remember that in the very early stages of development, the spinal cord reaches to the end of the coccyx. That is before the arches have completely fused, or rather about that time. The arches close over at the very latest point, chronologically speaking, in the coccygeal and sacral regions. Since they have been so long in making coalescence they have had all this period in which something might take place preventing the proper coalescence. Therefore, you get your defects in that region.

Now, why do you not have meningocele in that region if that is the case? Simply for this reason: In adult life the spinal cord proper has retracted until it reaches not lower than the second lumbar vertebra. The dura only reaches to about the second sacral segment. Both of them formerly reached to the end of the spinal column. You can't have a meningocele protrusion without the meninges, can you? In the very early life it was there; it has disappeared. But you have the injury or defect in the nerve which is still there. What are post-natal dimples? They are nothing more than evidence of defects in the closure of that canal. Look at the children as they are born, and I believe that in the majority you will find over the sacrum, dimples, scars and other evidences of defects. In the majority of instances, if they occur below the third, and particularly below the third segment of the sacrum probably nothing has happened. The amount of enervation, or disturbance of enervation amounts to so little as to be insignificant. But if it occurs in the second or third segment of the sacrum, there will likely be signs of faulty enervation. If the coalescence has reached no farther than the second sacral segment you do not have the actual tumor any more, but you have the scar remaining, or have the defect in the arches remaining probably, and what else do you have? You may have club feet, you may have imperforate vagina, you may have imperforate anus. Enuresis is one of the distressing symptoms which results from these lesions.

Now, practically speaking, what does this all mean? So far as treatment of Enuresis is concerned, there is not very much you can do for it, but we should recognize the true condition so as not to make treatment absolutely

fruitless along lines which will only meet with discouragement.

About twenty years ago I saw a child 10 or 11 years of age who had enuresis. He had gone to every new doctor that came to that town and each had failed. I was asked to see him because I was a new doctor there. I didn't recognize the true nature of the condition. Later I stumbled on to what the cause might be and went and investigated and found it was true. He had the sacral defect as just described. When you have these conditions, you can only give prognosis and direct the the management so that the patient will not be bothered by unnecessary treatment. They may improve if you will inject about 20 C.C. of normal salt solution slowly into the sacral canal. The child should have reached about 10 years of age so that it may co-operate with you in this treatment.

I merely bring this before you for the purpose of asking you to look up these conditions and, recognizing them, give your prognosis accordingly, and not torture these patients with all the instruments by which they are ordinarily treated.

PROCEEDINGS OF UNIVERSITY HOSPITAL CLINICAL SOCIETY

January 6, 1922

Dr. Fishman: *A Case of Spinal Cord Tumor.*

This patient, a woman of 48 years of age, began to complain of pain in the left chest and under the left shoulder blade about two years ago. This was continuous, severe, and rather constant, without any further developments that she knew of until about a year later when she began to notice that her legs felt tight and she had to use a cane for walking. From that time on the motor symptoms began to develop rapidly so that she has been practically helpless since. She has developed a sore in the sacral region which has been discharging some purulent material. Besides the motor symptoms and the pain, she finds that she is insensitive to heat and cold, and is unable to feel her lower extremities.

As far as her past illnesses are concerned, except for the usual diseases of childhood and tonsilitis, she has had no symptoms referrable to her present condition. Her personal and family history are uneventful. She has three healthy children and one died accidentally. There is no suggestion of nervous troubles in the family.

Physical Examination: Large obese woman of good mentality. Examination of the internal organs shows nothing unusual. There are no cranial nerve involvements. The upper extremities show no abnormal findings. There is an open wound at the lower portion ot the sacrum which shows a purulent discharge. Surrounding this there is an area of redness of trophic origin. The neurological examination shows further a complete spastic paralysis of both lower extremities, with deformities of the spastic type; that is, typical adduction and flexion of the legs and feet. There is also complete anesthesia to pain, touch, and temperature, as well as to muscle and joint sensation, including both lower extremities as high as the lower costal margin on both sides. Just above this level of anesthesia there is a narrow zone of hyperasthesia. There is also complete loss of sphincter control.

Comment: This is a case of progressive development of a cord lesion which began as a sensory irritation and required about a year for the development of the motor phenomena, and those symptoms of complete transverse cord involvement. The level of disturbance is precise, corresponding to about the sixth thoracic segment above which there is a narrow area of hyperasthesia.

Diagnosis: The findings are that of a double Brown-Sequard phenomenon, and because of its development is clinically that of tumor of the cord at the level of about the sixth lumbar segment.

Management is strictly surgical, and it is to be hoped that the tumor will present upon opening the meninges. Otherwise the operation should be done in two stages because many tumors subsequently appear at the exploratory site, some time after the primary operation. The ultimate result depends largely upon the actual destruction of cord tissue, although restoration of function is sometimes remarkable after apparent gross damage of the cord.

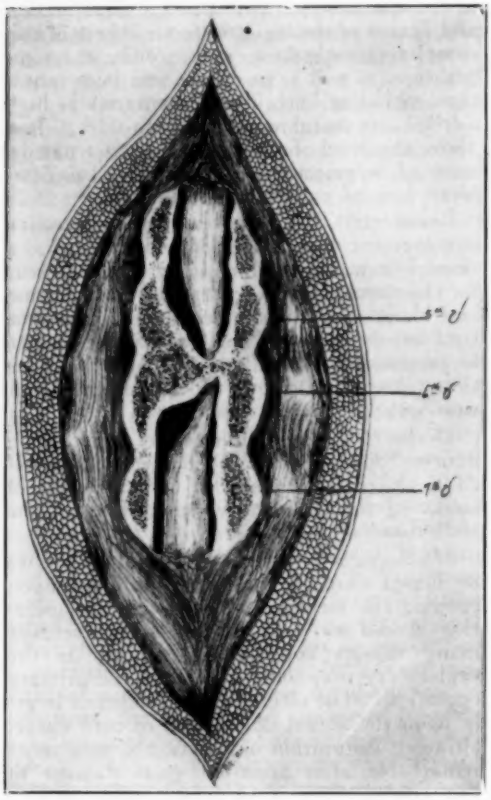
Subsequent Report on the Case of Spinal Tumor Presented at the State University Hospital Clinical Society, January 6, 1922, by Dr. C. J. Fishman.

Subsequent Report on Case Spinal Cord Tumor:

Dr. R. M. Howard operated this patient on January 23, 1922. The operation showed a bony tumor at the level of the sixth thoracic vertebra, as is shown in the sketch, with almost complete obliteration of the spinal cord. The pressure was relieved by removal of the bony tumor, and the patient's operative recovery was uneventful with union by first intention.

It is to be hoped that besides the relief of pain from which the patient has not suffered since the operation, there will be gradually an improvement in her trophic disturbances, and that the sensory disturbances will gradually come back approximately to normal. However, up to this date, Feb. 14, 1922, there has

been very little improvement except subjectively, although the patient claims to be able to feel some of the gross sensations to her lower extremities, and knows when her sphincter control needs to be attended to.



Agnes W., age 14, white, admitted to hospital December 29th, 1921.

History: Chief complaint, three weeks had pain in left ear followed in 24 hours by purulent discharge; pain has continued more or less ever since; however not so acute nor well localized to ear as in the beginning being more indefinite in character and variable in location. Sent to hospital by Doctor who thought she had involvement of the mastoid.

Previous History: Repeated attacks of earache since early childhood.

Had severe attack three years ago followed by purulent discharge; similar attacks occurred every 4 or 5 months until present attack. Has had Measles, Pertussis, Pneumonia and Influenza.

Family History: Negative.

Physical Examination: Poorly nourished and developed girl of 14 years. Drowsy and irritable. Cries with pain when moved. Wants to be left alone.

Head and Neck: Negative with exception of slight swelling below left mastoid and extending into cervical region along course of the sterno-mastoid muscle, some rigidity of neck attributed to the inflammatory condition about superior attachment of Sterno-mastoid.

Eyes: Pupils normal in size and reaction. Oscular excursions limited to left, i. e.: An object will be followed to the left slightly past the middle line then the eyes return to the right with a jerky motion; a beginning conjugate deviation. Slight congestion of left disc.

Ears: Chronic purulent discharge from left ear, offensive in character and moderate involvement of the mastoid.

Neurological Examination: No paralysis. No atrophy. Kernig sign questionable. Patellar reflexes exaggerated on both sides. Gordon and Oppenheim present on left. Babinski absent. Sensations normal. In-coordination when attempting to touch nose with finger, more marked in left arm. Patient slightly drowsy but easily aroused. No mental disturbance. No aphasia.

Temp. 98.8. Pulse 108. Resp. 12. Nothing unusual in character of pulse or respiration. Blood pressure 110-70.

Laboratory Examination: Urine, nothing significant. Blood, H. g. b. 85; R.B.C. 4, 180,000. W.B.C. 37,450: N. 94. T. 2, S.L. 1, L.L. 3.

Cerebro-spinal fluid: Clear and under slight pressure. Fibrin Neg. Cell count: 160. S.L. 61, L.L. 8, N. 31. Reduces Fehlings. Colloidal Gold, Meningitis curve.

Smear from Ear: Staphlococci in large number. Few diplococci, probably micrococeus catarrhalis.

A provisional diagnosis of tubercular meningitis accompanied by an intracranial abscess of mixed infection was made.

Further examination December 30, 1921: Temp. 100.8, Pulse 128, Resp. 22.

Retinal congestion more marked on left.

Blood examination: W.B.C. 29,900, N. 91, T. 3, S.L. 1, L.L. 3.

Spinal Fluid: Clear. Cell count 107, 74 Lymp. 26 Poly's other symptoms the same.

Dec. 31st, 1921: Patient had slight chill, and temp. rose to 102.4. Pulse 120, Resp, 26. Involuntary urination.

Definite congestion of left disc, slight of right. Neurological symptoms the same with the exception of a postive Babinski on right and slight Kernig both sides.

Blood Examination: Showed a drop in W.B.C. to 11,750. This was checked by Dr. Rigby who found 32,700.

Spinal Fluid: Does not reduce Fehlings. Cell count 45, 88 Lymp. 12 Poly's. No organisms found in fluid. Negative culture.

Jan. 1, 1922: Temp. 102.8, Pulse 102, Resp. 28, Projectile vomiting. Blood 11,350.

Jan. 2, 1922: At 4 P.M. Temp. 98, Pulse 150, Resp. 12. Respirations irregular. Blood 14,650. Decided that chief symptoms were due to an intracranial abscess of Otitic origin and operation indicated. Choosing the tempero-sphenoidal region, as the region of election. Dr. Long explored both the temporal and sphenoidal lobes without result. I then hurriedly opened the mastoid and exposed the Dura which pulsated and appeared normal and was not opened. No pus was found in the mastoid. Operation was considered a failure and patient returned to room with a grave prognosis. Patient died the following morning at 5 A. M. Post Mortem: Large abscesses of left cerebellar lobe having its origin in left middle ear and accompanied with a limited basilar meningitis. Culture of pus from abscess was B. coli. The purulent tract from middle ear to abscess was in posterior fossa just above mastoid exploration.

The treatment of this case other than operative has been of no significance. The chief points in this case as I see them are as follows:

1. The danger attending middle ear infections. The majority of Intra-cranial abscesses are of Otitic origin. There may be no ear symptoms other than a chronic discharge. The path of infection is usually through the labyrinth. either directly through the internal Auditory meatus or through the Aqueduct Vestibule or Aqueductus cochlae.

2. The early diagnosis of Meningeal and brain involvement. The symptoms resulting from intra-cranial involvement are dependent upon an increase in intra-cranial pressure and to the bacteria and their toxins, together with a disintegration of nerve tissue. The mo-t constant and significa nt symp tooethes with a disintegsation o! nerve tistom o! increased intra-csanial psessure is pain. Head uain localized in the temporal region rather than a severe pain in ear. Localization of pain may change to frontal or occipital regions. The pain in Brain abscesses is usually more severe early than late in the disease. Another early symptom of increased intra-cranial pressure is a swelling of the Optic papilla and a blurring of the margin of the optic disc. This should not be confounded with choked disc found later. If there has been a direct bacterial invasion of the central nervous system our earliest sign will be the disappearance of Carbohydrates from the cerebro-spinal fluid. This condition was not present upon first examination but found to exist on the second day, indicating a secondary involvement. The exception to this is in T.B. meningitis where the carbohydrates remain until late in the disease.

The neuro muscular symptoms may have been due to an abscess or meningitis. What deductions are to be made from symptoms and laboratory findings. The relative high lymphocytosis in spinal fluid had no signifcance.

3. When and where should we operate. All cases of Intra-cranial abscess should be operated as soon as a diagnosis can be made; even late in the disease. The operation should be done through the mastoid region when the infection is from the middle ear.

Dr. J. F. Kuhn: *Case of Suture of the Femoral Artery.*

J. W., colored, age 26, admitted University Hospital Nov. 16, 1921. Seven weeks previously had wounded himself by the accidental discharge of a 32 caliber automatic pistol, the bullet entering the inner aspect of the upper left thigh and ranging downwards. Swelling occurred rapidly; there was a very small amount of bleeding. The thigh was opened by a local physician and a tube inserted getting very little drainage. This wound closed in about one week, the swelling remaining. A week after this more swelling was noticeable, at the same time a throbbing pain in the thigh. This throbbing was visible to the patient. He was having fever, was growing progressively weaker. Three weeks later, and one week before admission to this hospital his doctor decided to lance the thigh again. Upon doing so, there appeared some very dark blood clots, quickly followed by free spurying hemorrhage. This hemorrhage was checked by an improvised tourniquette made by twisting and knotting a towel around the upper thigh. This was kept in place several days after which he was sent to this hospital.

He was observed here for two days with the following local signs: The upper thigh was markedly swollen and upon deep palpation there seemed to be some slight expansile pulsation. There was a distinct bruit heard over the femoral artery.

Blood count: On admission W. B. C. 16950 neutrophiles 71%

11-18-21 W.B.C. 15650 neutrophiles 88%

R.B.C. 1,660,000

His temperature was 102 degrees, pulse 120. No pulsation could be felt in the vessels in the lower leg, which was oedematous and cold, although capillary circulation was present. Diagnosis of a wound of the femoral vein or artery with hemaoma and continued slow hemorrhage.

On the morning of Nov. 18, 1921, the patient was taken to the operating room for further examination and it was found that during the

night much more hemorrhage had increased the swelling and the patient was noticeably weaker. Under very light ether an incision was made through the skin and superficial tissures; then blunt dissection down to an enormous semi-organized blood clot. This was hurriedly scooped out, a double handful at a time. As soon as the blood clot was cleared away a diagonal slit in the femoral artery was uncovered and this accounted for the free hemorrhage, it having perhaps been started anew by the examination of the night previously.

The patient's condition at this time was extremely. critical. He was in extreme shock, practically pulseless, respiration very shallow. The artery was hurriedly sutured using fine linen and placing the sutures so as to utilize the flap of artery, which had been slit up, as a valve. Two other very small slits were closed in similar manner. The cavity was packed with sterile gauze and the wound left unsutured. Patient was wrapped in warm blankets and kept on the operating table until it was thought safe to return him to the room. He was in such shock that his skin was almost constantly leaking; this was controlled by free use of pipuitary liquid. He was given large quantities of liquid by mouth when conscious. The whole leg was kept warmly bandaged and elevated. Pulsation subsequently returned to the posterior tibial and dorsalis pedis arteries. On the third morning wound was dressed and partially repacked; complete replacement of the large packing requiring several days. Patient's recovery has been slow owing to enormous cavity, but no interruption to this recovery has occurred. He was kept in bed for 6 weeks and is now up in wheel chair.

This case is another illustration of the extremely dangerous character of upper thigh injuries and the surgery of this region.

PROCEEDINGS OF ST. ANTHONY'S HOSPITAL CLINICAL SOCIETY

January 24, 1922.

Dr. A. B. Chase: *Clinic of Rheumatic Hearts With Mitral Involvement.*

Both of these patients have mitral regurgitation and mitral stenosis, irregular pulse, pulse rate in each being about seventy-five. The treatment of these cases is diametrically opposed. Both cases give a history of tonsilitis and rheumatic fever.

Cardiac irregularity may be "extra" or "intra" in origin. Extra-cardiac irregularity is due to some cause which affects the sinus node and, hence, causes cardiac irregularity. In both of these cases the irregularity is intracardiac. The sinus node is the pace-maker of the heart because it is the most irritable center in the heart. The ventricles also have the power of initiating impulses at the rate of approximately thirty per minute; the sinus node at the rate of approximately seventy-two per minute. The impulse starts from the sinus node, traversing the auricle and reaching the node of Twara in the auricle, thence passing through the auriculo-ventricular bundle. This bundle divides into two branches known as the right and left bundles which supply conductively to the right and left ventricles respectively. These bundles subdivide into the plexus of Purkinje which is found in the walls of the ventricles.

If the auricle or ventricle is irritable it has the power of developing a focus of contraction which passes downward over the heart and gives a contraction independent of the impulse which comes down from the sinus node. This is known as an ectopic focus and may cause a cardiac contraction before the regular contraction is due from the impulse coming down from the sinus node, and, hence, gives what is known as a premature beat or extrasystole. This can be best illustrated by supposing that a contraction arises in the sinus node every thirty seconds. An ectopic beat may arise at fifteen seconds instead of thirty seconds. The result is that when the impulse from the sinus auricular node reaches the heart at the expected time, thirty seconds, the ventricular muscle is in the stage known as refractory or contractile and as no impulse again comes down from the sinus node until the sixty seconds is reached the heart does not beat at thirty seconds but gives a period of forty-five seconds of stand-still. In extrasystole two contractions are irregular in time, but the sum total of time elapsed is equal to that of two normal contractions (30 plus 30 equals 60, or normal, and 15 plus 45 equals 60, or extrasystole). This delayed time is known as a period of compensation.

Heart block or delayed conduction: In complete heart block no impulses from the sinus node reach the ventricle due to the impulses not passing through the auricle-ventricular (Hiss) bundle. Hence the ventricle beats from its own power to originate impulses, and as the power to originate impulses averages about thirty per minute the ventricular contractions will be about thirty per minute. Heart block may be incomplete and permit impulses to pass through the auriculo-ventricular bundle slowly or permit only part of the impulses which come from above to get through. Nature may take advantage of this in certain cardiac conditions and produce more or less heart block, or it can be accomplished by digitalis or drugs of that group.

Auricular fibrillation is a condition in which

the auricles are in a state of diastole but quivering constantly, as one writer has said, like a bunch of angle-worms. In this class of cases the impulse comes down from the sinus node to the auricles, and the auricles do not respond to the stimulus from above, but from the irregular contraction they are sending out a constant shower of impulses of varying degrees of intensity, which pass through the sinus-auricular node to the ventricles. Coming as they do, at irregular intervals, they give us contractions irregular in time. Reaching the ventricular muscle in more or less exhaustion (refractory) the contractions vary in intensity. Hence, we get the absolute arhythmia which is characteristic of auricular fibrillation.

The electrocardiogram of a normal heart shows first a "p" wave indicating the passage of the impulse over the auricle. There is a period of approximately a tenth of a second between the "p" wave and the beginning of the "Q R S T " omplex which is indicative of the passage of the impulse throughout the ventricle. In one case shown by the electrocardiogram we note the "P R" interval is .15 of a second showing delayed conduction of the auriculo-ventricular bundle, and as digitalis delays conductivity of the bundle digitalis is contra-indicated. We note that the normal interval between two impulses is twenty-two millimeters, or forty-four millimeters for two impulses. This interval holds true throughout the entire electrocardiogram. About every tenth beat we notice an absence of the "P" wave. The "Q R T" complex occurs at fourteen millimeters and the next beat occurs thirty millimeters later which indicates a ventricular extrasystole. As the primary deflection of the "QR" complex is first downward and then upward, we are assured that this is an extrasystole due to a point of irritation arising in the left ventricle near the apex. Referring to the cardiogram of another patient we find a similar condition but with this difference: the initial phase of the "Q R S" complex is upward instead of downward, which indicates an extrasystole due to a focus arising in the right ventricle near the base. Hence, by the electrocardiogram we are able to decide the location of the focus of irritability. The "Q R S" complex of an extrasystole arising in the ventricle is not like that of the normal "Q R S" complex because the impulse does not originate and pass in exactly the same way as in the normal heart.

In the following electrocardiogram two things are noted: one, the absolute irregularity of time of the "Q R S" complices; second, the absence of a "P" wave, which are pathognomonic of auricular fibrillation. The curves which are seen between the "Q R" complices are due to the quivering of the auricle in diastole, which has already been referred to under the head of auricular fibrillation.

In our case of auricular fibrillation the treatment is digitalis sufficient to sedate the auriculo-ventricular bundle and prevent the excessive number of impulses to pass through, giving the ventricle time to steady itself in rate and sufficient time for the heart muscle to rest and prevent exhaustion.

Conclusion

Two patients presenting the same valvular lesions, the same pulse rate and irregular pulses, do not require the same treatment. Appropriate treatment, therefore, can be instituted only after complete examination of the patient. (Demonstration of the patients, electrocardiograms, and drawings).

Dr. S. R. Cunningham and Dr. A. D. Young: *Head Injury.*

This young man, Mr. H. C., 28 years of age, an oil field worker, was admitted October 29, 1921. Family history negative. Past history negative. Present illness dates from August 14, 1921, when he suffered severe injury to his head.

Physical Examination: Fairly well developed white male; good muscles except for the loss of tone and some atrophy of muscles of the right upper and lower extremities; pupils normal; tongue protudes to the left side. There is a large cerebral hernia at the site of a cranial defect in the right parietal region. Lungs clear.

Laboratory findings: October 29. Urine negative. Blood, R. B. C. 7,000,000. W.B.C. 15,950. P. 81% L. 18%. October 31, R. B. C. 5,400,000. W.B.C. 10,900. P. 68%. L. 31%. Wassermann reaction negative.

Stereoscopic X-ray you see in the rack made on admission, shows defect in the left parietal region about one inch by one and one-half inches. There is also shown a fragment about one inch square depressed and turned almost at right angles to the vault. Practically the entire right parietal bone is comminuted and linear fractures extend into the frontal and occipital bones. A very large fluctuating (not pulsating) hernia was protruding.

After consulting with Dr. A. D. Young, we decided to remove the depressed fragment and institute drainage. This we did on October 31, 1921. Although he had a rather stormy convalescence for a few weeks, he now is much improved in every particular. He is getting better use of his hand and arm and of his leg and foot. He talks much better and has gained about twenty pounds in weight.

While this young man exhibits an extensive injury to his skull it is no criterion of the extent of injury to his brain. It is unfortunate that such injuries are generally classed as

"fractures of the skull", for this directs too much attention to the cranium to the exclusion or minimizing of attention to the real injury—that of the brain. A cranial defect in itself bears no ill consequences. Depressed fragments and depressed and irregular edges of defects may produce symptoms of great variance and should have early surgical attention.

The physical effects produced by the penetrating, or through-and-through wound, the tangential or groove-like wound, and the puncture or depressed variety are: 1. A direct destructive effect upon the brain. 2. Reactionary swelling, i. e., acute cerebral oedema. 3. Hemorrhage. 4. Compound and depressed fractures. The extent of injury, barring infection that may follow all open wounds, can be determined by the mode of infliction, the appearance of the wound, the stereoscopic roentgenograms, and neurologic symptoms.

Through-and-through and tangential wounds should have immediate operation to enlarge the openings for drainage and the removal of depressed fragments or foreign bodies. Punctured and depressed fragments should be removed or elevated. Cerebral oedema should be relieved by the enlargement of existing defects or by subtemporal decompression. Cerebral hernia requires immediate enlargement of cranial and dural wounds and institution of drainage with especial care that no pressure is put upon the protruding brain.

The very large prolapse this patient suffered has entirely disappeared.

Prognosis: The cranial defects will never close except by connective tissue. Defects of any consequence in the skull, even linear ones, never ossify. I predict he will get fair use of his leg and very little use of his arm and hand. He should have no further neurological symptoms unless he should develop a chronic cerebral oedema.

Dr. A. D. Young: *Chronic Brain Injury.*

I will speak only of end results of brain injury. Sharpe ("Diagnosis and Treatment of Brain Injuries" by William Sharpe, M.D., J. B. Lippincott Co.) says "Of patients discharged as well, 67% of them were still suffering from the effects of the injury. The chief complaints were persistent headache, a change of personality of the depressed or of the excitable type, and thus emotionally unstable; early fatigue, making any prolonged physical or mental effort impossible, and thus the inability to work; lapses of memory, spells of dizziness and faintness, and even epileptiform seizures in a small percentage of them. In examining the hospital records of the patients having these post-traumatic conditions, it was most interesting to ascertain that these were the patients,— and there were but few exceptions,— who regained consciousness gradually after several days, and remained in the hospital for a period of four weeks and longer, whose charte made frequent mention of severe headache and a low pulse rate of 60, and in some cases below 60, that is, the usual clinical signs of an increased cranial pressure." In addition there is frequently seen increased and unequal reflexes, positive Babinski, impairment of special senses, blurring of nasal margin of optic disks, disturbance of the visual field.

All these symptoms and signs may be due not only to actual trauma of brain tissue but to chronic oedema of the brain as well. The cause of the continued oedema may be due to a remaining film from the original supracortical hemorrhage, to a depressed fracture, or the persistence of the acute oedema. If the manometer shows an abnormal increase in the cerebral spinal fluid a right sub-temporal decompression should be done. If in addition there is a piece of depressed bone, this can be removed or elevated at a subsequent operation. If there is no increase of pressure, it is advisable to take care of the depressed bone as the continued irritation may cause new symptoms to develop or cause the old ones to become intensified.

In this case, admitted October 29, fever began in a few days, running from normal to 103, irregularly. Convulsions began November 14. Projectile vomiting and headache just preceding the onset of convulsions. Convulsions from seven o'clock P.M. to ten o'clock P.M. one day only. Spinal puncture at this time yielded 36 c.c. spinal fluid and the cranial wound opened with very little pressure. The fluid was cloudy with 144 cells and four plus globulin; Wassermann reaction negative. The W.B.C. was 12,050 on the day of convulsions. Polys 84%. Lymphs 15%. Aphasia and paralysis of the left arm and leg has been present since the date of injury. He entered the hospital eleven weeks after the head injury. He was unconscious one day at the time of injury and practically so four days more. One piece of bone was removed at the time of injury and one at this hospital by Dr. S. R. Cunningham. The depressed bone, which was a loose and dead fragment, was removed. Eye examination by Dr. E. S. Ferguson showed: Pupillary reaction slightly sluggish; fundi show evidence of swelling about both nerves; arteries are restricted and edges of nerves indistinct; nerve heads show some exudate, particularly on the left side.

Conclusion

Optic neuritis due to central pressure with possibility of atrophy following, as nerves are already somewhat pale.

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Local news of possible interest to the medical profession, notes on removals, changes in address, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A., will not be accepted.

Advertising rates will be supplied on application. It is suggested that wherever possible members of the State Association should patronize our advertisers in preference to others as a matter of fair reciprocity.

EDITORIAL

STOP IT; IT'S UNNECESSARY, BESIDES YOU HAVE FOOLED NO ONE

The JOURNAL *positively appreciates* little items noting all activities of the doctor, his woes and joys, his successes, in fact everything about him, even unto his death, if that misfortune must be sadly reduced to written comment. BUT, We do become some riled, "hard-boiled" and adjectively inclined over the experience, the following lines describe as typical the silly practice. Our mail brings this:

Possum Hollow, Okla.,

"Dear Doctor: You may send my journal to ..... Chi., N. Y., Rochester, (as the case may be.) Yours very truly, John Doe, M. D.

We do that, only to have notice, sometimes none, from the Postmaster, returning the Journal at our expense, with a heavy postage due attachment. We at once investigate. We write the postmaster "You returned Dr. Doe's Journal as undeliverable, *at our expense*. That was wrong, you should have advised us on certain Form as your regulations provide." We also write the County Secretary, "Where is Dr. Doe? Chicago Postoffice has returned his Journal, undeliverable." Sometimes we even make more time-wasting, useless effort than the above indicates. We tell the printer as to Doe, "Cut him off." He does. You, along with Doe and all the others pay the bill, not much of itself, but very much when you cast up the total of such matters. We also move him around in the office considerably. Everything about it is subject to more or less error. Your Secretary hears from that. We finally locate Dr. Doe, back at Possum Hollow, returned, according to the Possum Hollow Tribune, from an extensive stay, (he was gone three weeks) to the celebrated clinics of the world, where he mastered everything intricate, new, useful and advanced in the science of medicine and surgery. We then understand that Dr. Doe left home for a few days stay and wanted the JOURNAL to know it. One minute of his time and an expensive one-cent postal card would have served the purpose. STOP IT.

WHY THE OBSOLETE QUARANTINE?

The JOURNAL is irritated by other things than that of wasted effort noted elsewhere. One of the oldest, as well as most useless practices to which an informed, modern people is given, is that surrounding the disease we have had with us since the beginning of things, and which will continue to be, though useless and unnecessary if treated with the intelligence the matter demands, but which has not been, is not now, and never will be, as long as silly prejudice, ignorance, Christian Science, Osteopathy (in part, they are getting wised up), Chiropractics and similar ilk are permitted to inject their voodooism, and general lack of understanding into the matter, and which is permitted by a tolerant attitude of our people, who in so doing fondly prate about the constitutional right of the citizen to follow his own inclinations; forgetting when they deliver that senseless, inapplicable creed, that altogether these opponents of known facts as to potency of preventive measures comprise a mere fraction, a small minority of the people, who themselves have the right to demand and expect that no privilege be permitted one, if that permission makes possible injury to the mass. Certainly disregard of the rights of the majority is all the general attitude of these people amount to. But, in this matter of smallpox, health authorities and municipalities have pointed out to them the most effi-

cacious system imaginable, if they would only exercise it. This effort is prompted by reading a McAlester newspaper dispatch, stating that entrance to the penitentiary had been denied a number of Muskogee County prisoners on the theory that they would endanger the inmates already there. What a silly commentary on our boasted advances! What a a reflection on our understanding! Why should the Warden of the penitentiary, the State Commissioner of Health or anyone worry a moment over that matter? Surely every inmate has been vaccinated, or ought to have been, promptly on his delivery there. To carry the thing to its logical conclusion, everyone of them should have been promptly vaccinated by the jail physician of the county concerned, immediately upon incarceration. That would absolutely settle the matter. They or no one would need have a moments hesitancy, after they were so successfully protected, to care a figment where or when they went. No one could injure them, they could injure no one, so far as disseminating or acquiring smallpox.If there ever was a matter in which unanimity of opinion has been reached, it is this very matter. Yet the same old useless, silly, indefensible system is in vogue, as was the accepted practice when the writer came to the Indian Territory in 1882. It is not pertinent, yet significant, that then most physicians dreaded that disease. If we were Commissioner of Health of Oklahoma, probably the first order we would issue would be that requiring protective vaccination for every person under jurisdiction of the office. After that they would be permitted to go where they pleased, and anyone, those in the full flush of smallpox, would be permitted access to them, and with safety assured. Why then is all this excitement and hysteria, this lost motion and misdirected effort permitted existence as to the matter? The vaccinated person has nothing to fear, the unvaccinated should have no hearing on the matter. He should either be vaccinated or permitted, in the exercise of his rights, to contract it or not, as his God of luck saw fit.

WORKINGS OF THE STATE COMPENSATION LAW

Many inquiries come to the Journal on various phases of the Workman's Compensation Law. Two things especially seem to be sources of misunderstanding between the companies and the physicians concerned; they are the right of the companies to designate whom they will have to attend their employees and the amount of the fee to be charged. It is at once apparent to any fair minded man that some of our physicians render unreasonable bills for services rendered these men;that they do this on the knowledge that a "corporation" must pay the bill is al so apparent. The Oklahoma law on this matter presumes that in rendering these bills, the physician will bear in mind that he is to make a charge in keeping with the standard of living of his patient, his wages and all other considerations. In other words, he is not to make a bill for treating a fractured femur of the same magnitude he would make in the care of a bank president. This principle is the one most potent stumbling-block over which most of the trouble arises.

As to selecting the attendant. Whether we like it or not, it seems reasonable that these companies should, as they must pay the bill, have some little latitude as to whom they will place in charge of the employe's injuries. It is also apparent, or should be, that in many cases this discretion is not safely left with the employe. He selects a physician because he likes him personally, because he tells a good story, because of his peculiar brand of profanity or some other irrelevant matter; while the company, presumably, selects the man whom they believe to be most competent; who, by rendering skilled service will lessen the time of incapacity of the injured, get him back on the job earliest and consequently cut short the time and amount during which the company must pay compensation. We should not overlook the fact in this connection either that this payment is made, this care given the injured, whether it be due to the man's forgetfulness and carelessness, the company's or some other person in no way connected with the matter. Should an oilfield worker fall from the derrick while carelessly inattentive to the duty at hand, the company, in no way responsible for his fall, who do not want him incapacitated, but efficient, awake and able to work, must pay the bill.

Replying to some such matter arising in Carter County, Honorable Baxter Taylor, Chairman of the Industrial Commission, wrote the annexed letter, which is reproduced for the information of those concerned. It goes without saying that the rank and file of our members will meet more than half way any reasonable proposition anent this work. They should neither be imposed upon nor should the occasionally met, obstinate, unreasonable physician, who attempts to run counter to all reason in the matter, be tolerated to the extent that he do injustice to any corporation or insurance carrier.

While discussing the matter our members should also understand that the Industrial Commission has in Oklahoma City a competent surgeon to whom certain bills rendered are referred for decision as to their reasonableness.

While, naturally, he may make errors one way or the other, it is the fact that they are very few and little complaint has arisen on that score. It is suggested, to make the way of everyone easier, that statements for services rendered should be full and ample, setting forth the conditions met, the service rendered, and, in those cases where an apparently trivial matter seems to have been charged a very high fee, the complications demanding extra and unusual care, if shown, will be given due consideration and the liability to injustice to the physician lessened.

Oklahoma City, Okla. Jan. 1, 1922.

Dr. Carrol A. Johnson, Wilson, Oklahoma.

Dear Sir: Your communication of January 19 and bearing the names of several persons in typewriting, addressed to the State Industrial Commission, has been received.

We have read this letter and considered it with care. We regret of course that there has been engendered feeling among the physicians of Wilson, and that vicinity, with reference to the attitude of the Magnolia Petroleum Company. However, this is a matter over which we have no authority except it is the duty of the Commission to see that injured persons coming under its jurisdiction have proper medical treatment. But so long as the treatment is administered by competent physicians we have no statutory authority to interfere. As the law is constituted, it is a matter entirely of private contract. Any company has the right to employ as many or as few as it chooses to do; but so long as its casualities are properly cared for the State Industrial Commission has no legal right to interfere. And as to the designation of the hospitals the same must be said.

With personal regards and best wishes, we are, Very respectfully yours,

Baxter Taylor, Chairman.

Editorial Notes—Personal and General

Dr. L. H. Hill, Idabel, is in St. Louis doing special work in eye, ear, etc.

Dr. V. R. Hamble, Okeene, has assumed charge of the Okeene Hospital.

Dr. W. E. Dicken, Oklahoma City, attended Chicago and Rochester Clinics in February.

Dr. S. E. Mitchell, Stigler has located in Muskogee and will do eye, ear, nose and throat work.

Dr. A. L. McInnis, Enid, mourns the loss of his father who died at Llane, Texas, January 12.

Dr. James C. Braswell announces his location at Tulsa proposing to specialize in eye, ear, nose and throat work.

Dr. A. D. Young, Oklahoma City, recently addressed the Public Welfare League of his city on the use of mental tests for delinquents.

Dr. Roy Pendergraft, Hellis, visited Corpus Christi, the home of his parents, Dr. and Mrs. W. C. Pendergraft, formerly of Oklahoma.

Dr. Willis K. West, 316 Terminal Building, Oklahoma City, announces that he will hereafter limit his work to orthopedic and industrial surgery.

Dr. L. W. Cotton, Enid, suffered a severe injury January 7, when his automobile was struck by a street car. He was soon able, however, to resume his work.

Muskogee's Health Department recently gave out a statistical report showing a most remarkable record as to freedom from contagious and infectious diseases. The report indicates the lowest morbidity rate in the state for the time covered.

Dr. Edward De Meglio, Oklahoma City, according to press dispatches, failed in securing naturalization papers upon application to Federal authorities in that city in January. Dr. De Meglio has been here since 1906, coming to this country from Austria.

Dr. G. M. Clifton, Norman, has joined the great and ever growing order of auto thief victims. His Ford coupe was stolen from his garage on the night of February 4. A reward for the recovery of the car and the apprehension of the thief has been offered.

The American Medical Association makes official announcement that they meet in St. Louis, May 22-23-24-25 and 26. Advice that hotels be now reserved is made, and if not satisfied by personal effort, write Dr. Louis H. Behrens, 3525 Pine, St. Louis.

Ardmore proposes to have a county hospital for the care of people unable to pay for their care. A committee has been appointed by Dr. G. W. Amerson, president of Carter County Society, to confer with the county commissioners and devise the plans therefor.

Cushing Hospital is now an assured matter. All preliminaries incident to sale of the bonds having been cleared, contract for the building and all other needs let, work will begin at once. The building will cost $50,000.00; the site, $5,200.00; fixtures and electrical appliances $6,800.00 and other essentials $4,000.00.

Dr. Antonio D. Young, 1011 First National Bank Bldg., Oklahoma City, while enroute to Cuba and Panama recently was compelled to abandon his trip because of illness. He reached Daytona, Florida and remained eight days in a hospital there. The diagnosis was cardiospasm. It has been suggested that the contraction of the oesophagus was due to anticipation of fluids he might have been able to introduce into his gastric cavity had he reached Havana.

Dr. Fowler Border, Mangum, was one of a large party of Oklahoma business men visiting Mexico in February. The itinerary included practically all the important cities and points of interest in the Republic. President Obregon tendered the visitors his official welcome and they were shown every courtesy. The party left Oklahoma via the Rock Island lines, occupying throughout the trip the Pullman cars in which they began the journey, with the slight gap between Vera Cruz and the City of Mexico. Among the unusual features was an aeroplane trip from Mexico to the Tampico oil fields, for such as desired to take the trip. At Matamoras the party was met by the Mexican Consul General, who accompanied them for the remainder of the trip.

Carter County Physicians residing in Wilson and Healdton, recently held an indignation meeting, protesting against the action of a representative of the Magnolia Corporation, who, in effect debarred most of them from the emergency work of that company, when he issued an order that his company would after that date, pay only for first aid work, except that done by its regularly appointed surgeons. The physicians propose to carry the matter to the court of last resort before submitting to

what they term "discrimination," "injustice" etc., not only to them, but the hospitals of their communities as well.

Okmulgee County Society program for February 13, listed the abdication of its old officers and the ascension to the throne of those elected for 1922. A paper "Lobar Pneumonia" was offered by Dr. O. O. Hammond, Okmulgee, to be discussed by Dr. W. L. Stephenson, Henryetta; an "X-ray Clinic" under direction of Dr. C. M. Ming, demonstrated or discussed by Dr. J. E. Bercaw, both of Okmulgee, and "The Treatment of Fractured Tibia and Fibula" by Dr. F. L. Nelson, Okmulgee, discussed by Dr. G. Y. McKinney, Henryetta, were drawing attractions of the meeting.

The American Medical Association announces a Chicago meeting March 6 to 10, under the auspices of the following subsidiary committees of the parent body: "Council on Medical Education and Hospitals." "Council on Health and Public Instruction;" "Association of American Medical Colleges;" "Federation of State Medical Boards of the United States" and "The American Conference on Hospital Service." Meetings will be held in The Florentine Room, Congress Hotel. Information may be had by writing Doctors Alex R. Craig, Frederick R. Green, or N. P. Colwell, 535 North Dearborn, Chicago. The names of Bevan, Colwell, Wilbur, Hugh Cabot, Dodson, Sinnser, McClintock, Strickler, McDavitt, Vaughn, Frederick Green, Billings and many others warrant the success of the affair at the outset.

Tulsa County Society meeting February 13, offered, among other stellar attractions, a paper by Dr. R. A. Douglass on "Various Phases of Diagnosis and Treatment of Hemorrhoids." Mrs. Ferrell, a Chautauqua lecturer, was scheduled to briefly address the meeting on the "Value of Physical Training in the Promotion of Health." The Secretary made the precautionary statement in his Bulletin to the members that Mrs. Ferrell was not a "Chiro."

A representative delegation from the local Dairyman's Association was to be heard as to their views on the proposed milk ordinance for Tulsa. Secretary Summers did not fail to append a foot-note in the Bulletin advising members that papers proposed for reading at the State meeting should first be offered to the contributor's society. This requirement has always been more honored in the breach than by observance. That it is a sensible safeguard will be apparent upon recalling some of the farces and abnormalities occasionally heard at our annual meetings.

Tulsa County Society, meeting December 8, heard a paper by Dr. J. Winter Brown on "Practice in China." By a vote of 24 to 10 Dr. H. B. Gwin was expelled, after trial by the society. Constitutional amendment prohibiting members from carrying cards in public print was adopted by vote of 19 to 9. A present of Christmas cigars to the Tulsa police was ordered. The Wertheim Obstetrical motion picture film was ordered secured. Dr. J. Winter Brown, after adjournment exhibited to the members his collection of curios from the Orient.

Tulsa County Society, (Meeting January 23. Dr. Chas. H. Ball, the President, presiding.)

Visiting members of the Oklahoma Serological Society were presented to the society. Dr. W. Forrest Dutton read a paper on "What the Medical Profession Expects of the Laboratory;" Dr. Wann Langston, Oklahoma City, Chief of the University Laboratory, read a paper on "What the Laboratory Expects of the Medical Profession." The papers were discussed by Dr. Wm. H. Bailey, Oklahoma City, and Dr. Lyman A. Barber, Tulsa. Drs. D. M. McDonald and J. C. Peden were received as members. After adjournment lunch was served, the members then attending the presentation of the Werthiem Obstetrical Film at Majestic Theatre.

The Oklahoma Association of Laboratory Workers is the changed title of the State Serological Association. The change, in name only, made January 23, at the Tulsa meeting, was to enable extension of membership to those technicians and laboratory workers, not necessarily physicians. This made possible the election of Mr. Fred Severs English, Muskogee, who, though not a physician, is a skilled laboratory technician, Secretary-Treasurer of the organization. Mr. English, who is assistant Pathologist in Muskogee Laboratory, is the grand son of one of the State's pioneers and financiers of the past, Captain F. B. Severs. Mr. L. E. Woods of Enid was elected President and Dr. Wm. H. Bailey, Oklahoma City, vice-president.

The question of standardization of technic and antigens, especially in the Wassermann test, was up for discussion, it being generally thought that physicians were dissatisfied with the present variance found by reason of different methods being used. Difficulty of such unification, however, was realized and the subject was deferred until the next annual meeting, in the meantime all laboratories will be called on for suggestions and cooperation.

A resolution was adopted that the annual meeting be held the day previous and in the city of meeting of the Oklahoma State Medical Association.

Responsibility attaching to the work of technicians brought a resolution that a set of requirements as to efficiency be formulated and that all members of the Association be required to establish their fitness in that respect as a prerequisite to membership. It is hoped that much of the present dangerous and incompetent work of unskilled workers may be avoided. The necessity of legal safeguards was also discussed.

DOCTOR MILLARD FILMORE DECKER

Dr. M. F. Decker, Comanche, died suddenly at Corum, Oklahoma, December 29. He had been in splendid health, so death came to him with little or no warning.

Born March 9, 1866, at Macoupin, Illinois, after receiving such literary preparation as was offered by the common schools of his vicinity, he finally entered Barnes College, graduating therefrom in May, 1904. Practicing in St. Louis one year, he then moved to Flora, Illinois, remaining for three or four years, then to Comanche, Oklahoma, after which he located at Corum, where he died. Married to Miss Mattie E. Markham, Taylorville, Illinois, in 1892, the union resulted in one son, Ivan F. Decker, who resides at Corum, the family home.

Funeral services were held under the auspices of the Scottish Rite Masonic Fraternity, midnight December 31, at low 12:00 o'clock, Corum M. E. Church, and at the family residence January 1, conducted by the Reverends Paul Haskins, Pauls Valley, and J. J. Ward of Corum; after which the Master Masons interred the remains in the Duncan cemetery. Diamond Chapter, O. E. S., Corum, directed a committee to prepare fitting resolutions on his demise, the Duncan Banner regarding him as "Our beloved and honored fraternal and Christian brother." The resolutions noted the fact that he was indeed a friend to the needy, stressing especially his devotion to his work, his tolerance to the faults of others and his ever readiness to aid the distressed.

MUSKOGEE'S "TARTAR"

The Tulsa World has this to say about the Muskogee Hospital situation, a very accurate appraisement.

It now appears that Muskogee got something beside a soldier hospital when its offer to the locating board was accepted. Muskogee had already arranged to erect a $150,000 municipal hospital on the tract offered the state hospital board. Now the state board demands the right to name the architect for both institutions—the Muskogee institution as well as the soldier institution, and Muskogee architects are so wroth that they are spitting cotton. Yet official Muskogee is afraid to say a word because of the danger of the locating board changing its mind and taking the soldier institution somewhere else. How blessed it is not to be mixed up with any of these state

institutions, their political godfathers and pet architects! Sometimes we are prone to think Tulsa people do not know just how fortunate they have been in never having had anything to do with state institutions. Muskogee had as well get accustomed to the political goose-step; she'll have to learn to like it.

IMPORTANT NOTICE

Annual meeting date has been changed to May 9-10-11, 1922. Notice that this was unavoidable was given the Journal at the last moment. Four other organizations scheduled for meetings on that date render this change imperative. The date selected was the best left open, all things taken into consideration. It is positively necessary that all officers and section chairmen cooperate in giving this change wide publicity. It also demands rapid making up of section programs, addresses, reports, etc.

C. A. Thompson, Secretary.

Absracts, Observations from Current Medical Literature

CERTAIN FUNDAMENTALS IN EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS

Lawrason Brown, M. D., Saranac Lake, N. Y.
(*Jour. Am. Med. Assn., Jan.* 14, 1922, *p.* 79.)

The author, approaching the problem from the viewpoint of the general practitioner, assumes that the following questions must be answered:

1. Has the patient pulmonary tuberculosis? If so, how much involvement and how much activity?
2. What must be the probable duration of the treatment?
3. If prolonged treatment is required must it be in the home, sanatorium, hospital, or in a class?
4. What shall the patient be told?

These points are then taken up and discussed in detail.

He considers five data essential in the diagnosis of pulmonary tuberculosis, which, in the order of their importance, are: (1) Tubercle bacilli in the sputum; (2) A parenchymatous rentgen-ray lesion above the second rib and the spine of the third thoracic vertebra; (3) Moderately coarse rales above the second rib and the third thoracic spine; (4) Hemoptysis; (5) Pleurisy with effusion.

Pre-requisite to a negative diagnosis is the absence of all five of these data. Either hemoptysis or pleurisy with effusion alone justifies the diagnosis of suspected pulmonary tuberculosis, while moderately coarse rales, or parenchymatouc rentgen-ray lesions in the apices should be considered as due to tuberculosis, unless the contrary can be proven. The finding of three or four tuberele bacilli makes the diagnosis certain, but the diagnosis must in the majority of cases be made before this evidence is available.

In doubtful cases a negative subcutaneous tuberculin reaction has proven, in the experience of the author, almost infallible in deciding against the necessity for treatment.

The occurrence of tubercle bacilli in the sputum indicates activity of the process in about 90% of the cases, and the presence of elastic tissue in the sputum in 100%, but the diagnosis of clinical activity jmust be based largely, if not entirely on physical signs. Cough and expectoration, rales, and even in certain cases, the presence of tubercle bacilli in the sputum, are not positive evidence of activity.

Benjamin H. Brown

PRESENT TENDENCIES IN THE TREATMENT OF CONGENITAL CLUB-FOOT

Eben W. Fiske, M. D., Pittsburgh

In a questionaire sent out to sixty-six Orthopedic Surgeons, the following question and snswers were compiled.

1. At what age do you prefer to begin treatment of congenital equino-varus?

Answers: Ninety percent in favor of beginning in the first month and three-fourths of these in the first week. Only four surgeons would wait longer.

2. What method do you employ in your youngest cases?

Answers: All manipulate in the beginning. All but three follow with fixation. Forty use plaster of paris. First treatment under anesthesia is used by three men two of them operating. The general opinion is decidedly in favor of immediate treatment of the new-born when possible by manipulation.

3. Under what conditions do you use tenotomy and forcible correction with anesthesia in cases under six months?

Answers: Fifty-six per cent were opposed to operation or anesthesia. Thirty-four per cent were conservative in their views and ten percent who might be considered radical.

4. Under what conditions do you use tenotomy and forcible correction with anesthesia in cases under two years?

Answers: Sixty-five percent employ tenotomy and forcible correction. Thirteen per cent are still opposed at the age of two years and twenty-two per cent favored these methods. There is then a trend from the conservative to the operative in the second year but a majority do not favor bone operation.

5. What is your general method in older or relapsed cases? What operative proceedure do you find most successful?

Answers: Thirty:four generally employ radical bone operations, while twenty-one follow lesser measures by a bone operation only if the former fails. Eight use non-operative measures.

Earl D. McBride, M. D., Oklahoma City.

NEW BOOKS

THE LIFE OF JACOB HENLE

By Victor Robinson, M. D., Formerly Editor of the Medical Review of Reviews; Editor of Medical Life, bound in green cloth, and cardboard, with an emblem in gold, one photogravure of Henle, 117 pages, Price $3.00, 1921, Medical Life Company, 12 Mount Morris Park West, New York.

"The greatest histologist of his time; the greatest anatomist of all times... A jew, first describer of epithelia of the skin and intestines, ciliated and columnar epithelium, sensed its function, demonstrator of the endothelial coat of vessels, which discovery was the capstone of our present theories of the vaso-motor mechanism. He discovered the striated muscle of the bladder, central chylous vessels, internal root-sheath of the hair,what we now call in his honor 'Henle's tubules' in the kidney, gave the first accurate account of the corneal morpnology, development of the larynx. First appreciator of the importance of many parts of the brain, relations of the hippocampus,character of the pituitary body." This and much more is the tribute paid by the

medical historian, Garrison, to the remarkable achievements of a most remarkable man. Garrison, by the way, is given grateful credit by the author of this life for "the circumspection with which he read the manuscript, his courtesy in offering many helpful suggestions." Perhaps no medical editor is better fitted by ability and enthusiastic interest than is Dr. Robinson to record the outstanding epochs of the great of the medical profession who have gone before, but in going left their imprint on time. Certainly Henle left his. His struggles, activities, sorrows and joys, disappointments and triumphs, but above all, the little intimate characteristics of the man, his peculiarities and the things not incorporated in the pages of his medical productions, are made the subject of Dr. Robinson's tribute to the man.

THE PRACTICAL MEDICINE SERIES

Volume 6, Under the General Editorial Charge of Charles L. Mix, A.M., M.D., Professor, Physical Diagnosis, Northwestern University Medical School etc, etc. Cloth, illustrated, price $1.75, Series 1921. The Year Book Publishers, 304 South Dearborn St., Chicago.

PHARMACOLOGY AND THERAPEUTICS

By Bernard Fantus, M.S., M.D., Assistant Professor of Therapeutics, Rush Medical College.

PREVENTIVE MEDICINE

By Wm. A. Evans, M.S., M.D., LL.D., D.P.H., Professor of Sanitary Science, Northwestern University Medical School, with the collaboration of G. Koehler, M.D., Assistant Commissioner of Health, Chicago.

231 pages of this volume are devoted to a boiled down, but authorative digest of pharmaceutical literature, advancements and improvements for the year since issue of its predecessor. Fantus is so well able to select the best of such that restating that fact is unnecessary. The remainder of the 386 pages is in the same high class as above noted. Dr. Evans is the most popular director of public thought on matters of public health America has ever produced.

MEDICAL AND SURGICAL REPORTS- EPISCOPAL HOSPITAL, PHILADELPHIA. VOLUME V.

Prepared by the Committee of Publication, Edited by Astley P. C. Ashnurst, member, M. D., with the collaboration of John B. Carson, M. D., Chairman, and Harold Goldberg, M. D., member of the board. Cloth, illustrated, 506 pages, 1920. Press of Wm. J. Doran, Philadelphia. Price _____.

Contributors to this volume, thirty-four in number, contain among the personnel many names held in high esteem by the American profession, Ashnurst, H. C. Deaver, William E. Parke, Bruce Gill, the orthopaedic surgeon, John Paul Jones, Warren Walker, sufficient to have one judge the merit of the work. Statistical tables indicate the number, type, and type subdivisions of the 4,534 patients admitted to the hospital, not counting the average daily dispensary cases, which number 222.5. The War's toll is indicated by the fact that the gross cost per patient per day for 1917 was $2.40; 1918, $2.38; 1919, $3.25. The present volume is the only one published since 1916, likewise due to war's demands.

Warren Walker lays down a compact, workable system for operating a venereal clinic, which has unusual time saving suggestions, and which, after modification to fit the needs of the clinic in mind, should be applicable to all clinics. He provides for complete examination, taking into scope the special functions and infections of the eye, nervous system, etc. The needs of the clinic are also listed. "The Method of Recording Surgical Operations at the Front" is one of the contributions of Ashnurst, and holds so much of the fine, accurate system of the French, that it would be well for every man, vexed and harried by work, made more vexed and harried by lack of system, to read. If we are deficient in any one thing almost universally, especially the small town doctor, it is in the keeping of accurate records. We pass it up with the excuse that we have not time. Inauguration of a good system saves time. Ashhurst also illustrates "End Results of Certain Methods of Bridging Defects in Peripheral Nerves," of great interest to the emergency and industrial surgeon.

Throughout the work is a fine resume of the hospital's cases, and naturally a wide range of subjects are treated.

PRINCIPLES OF MEDICAL TREATMENT

By George Cheever Shattuck, M. D., A. M., Assistant Professor of Tropical Medicine, Harvard Medical School. Formerly Assistant Visiting Physician, Massachusetts General Hospital. Fifth Revised Edition, with the collaboration of the following authors, "Tuberculosis," John B. Hawes, 2nd., M. D. Assistant Visiting Physician and Director of the Clinic for Pulmonary Diseases, Massachusetts General Hospital etc. "Acute Infectious Diseases Most Common in Childhood," Edwin H. Place, M. D., Physician in Chief of South (Contagious) Department, Boston City Hospital, Assistant Professor of Pediatrics, Harvard Medical School. "Influenza," Gerald Blake, M. D., Associate in Medicine, Massachusetts General Hospital, Instructor in Medicine, Harvard Medical School. "Diabetes Mellitus," Benjamin H. Eagle, M. D., Assistant Physician to Out-Patients, Massachusetts General Hospital. "Serum Treatment of Pneumonia," Henry M. Thomas, Jr., M. D., Resident Physician, Johns Hopkins Hospital. Beautifully bound in Silk Cloth, 309 pages, Price $3.50, Boston 1921, W. M. Leonard, Inc., Publishers.

Of the greatest convenience to the physician given to adding to what he considers good and worth saving for the future, is the blank page facing each page of the text. We cannot help wonder why that has not been incorporated in other similar works.

The work is simply all meat, no dross, speculative, theoretical lines cumber its pages. Terseness and brevity, with delightful diction, characterize the text and makes of it anything except the dryness so often accompanying medical writings. Therapeutic measures of every useful recognized standard are made up into thorough text, which leaves no important principle forgotten. Shattuck's style is of the rare class systematically covering the ground in the clearest language. Physiological and therapeutic measures, with the "why" of the drug in a given instance, are fully expressed, so that one considering the needs of his patient has the ground covered in such manner as leaves nothing worth while in the "absentees" of medicine.

PSYCHOANLYSIS
(Second Edition)

Psychoanalysis: Its Theories and Practical Application. By A. A. Brill, Ph. B., M.D. Lecturer on Psychoanalysis and Abnormal Psychology, New York University. Third Edition, thoroughly revised. Octavo of 468 pages. Philadelphia and London: W. B. Saunders Company, 1922. Cloth, $5.00 net.

PAPERS FROM THE MAYO FOUNDATION

Papers from the Mayo Foundation for Medical Education and Research and the Graduate School of Medicine of the University of Minnesota, covering the period of 1915-1920. Octavo volume of 695 pages with 203 illustrations. Philadelphia and London: W. B. Saunders Company, 1921. Cloth, $10.00 net.

NEOPLASTIC DISEASES
(Second Edition)

Neoplastic Diseases. A treatise on Tumors. By James Ewing, M. D., Sc. D., Professor of Pathology at Cornell University Medical College, New York City, Second Edition, Revised and Enlarged. Octavo of 1054 pages with 514 illustrations. Philadelphia and London: W. B. Saunders Company, 1922. Cloth $12.00 net.

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